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INTERNATIONAL GLASS SCULPTURE

April 7-May 6, 1973

LOWE ART MUSEUM
UNIVERSITY OF MIAMI

INFORMATION

MUSEUM HOURS: Monday through Friday, 12 noon to 5 p.m. (offices open 8:30 a.m. to 5 p.m.); Saturday, 10 a.m. to 5 p.m.; Sunday, 2 p.m. to 5 p.m.

MUSEUM INFORMATION: Telephone 305-284-3535; write to the Lowe Art Museum, University of Miami, 1301 Miller Drive, Coral Gables, Florida 33146.

ADMISSION FREE: Guided tours by volunteer docents are available. Please call ten days in advance.

MUSEUM STAFF: John H. Barrate, Director; Paul E. Thompson, Assistant Director; Ms. Carol Hotchkiss, Registrar; Mrs. Anita Richards, Coordinating Assistant; Mrs. Nancy Krantz, Museum Secretary; Mrs. Jan Schweighardt, Assistant Museum Secretary; Ms. Joan Ziegler, Membership Secretary and Receptionist; Elliott Stringer, Building Superintendent; Jerry Chungo, Installation Engineer.

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Catalog edited and designed by Paul E. Thompson.

Cover:

106 Robert Willson, **The Moon,** 1970, 10" diameter. Made at Barbini Glass Works, Murano Italy. Mr. Robert Willson.

PREFACE

What we are really seeing in this exhibition is light translated; light absorbed; light reflected, refracted, dissolved, concentrated, splayed, enhanced, and reduced to its essentials. The visual sensory experience, so vital to all the plastic arts, reaches a peak of excitement and importance in the medium of glass sculpture unparalleled in the art world. From the exquisite soft color of long-buried ancient glass to the rich depth and emotional impact of Gothic stained windows, history is replete with examples of the glassmaker's skills combined with those of the artist. But it has only been in recent years that glass as a serious sculptural medium has been accepted and practiced on a wide scale.

The three essays presented in this catalog outline the development of glass from its earliest days to the present, examine the medium itself, and together show why this exhibition of International Glass Sculpture has been necessary. We are most grateful to artist Robert Willson, of the University of Miami faculty, to Mr. Kenneth Wilson, Director of the Corning Museum of Glass, and to Sr. Astone Gasparetto, Director of the Instituto Veneto per il Lavoro, Murano, Italy, for preparing the articles.

Of particular importance to the organization of International Glass Sculpture has been Robert Willson, who suggested the Museum initiate the exhibition and has served as the chief arm of the Lowe in locating and securing works. Without his expertise and thorough knowledge, we could not have corralled such a complete selection exemplifying all aspects of glass as sculpture; indeed, we would not likely have known about much that is being done.

The reason for such a lack of knowledge is simple: there has never been a complete and major exhibition of glass sculpture presented from an international viewpoint, anywhere. Shows that have been organized have either been local, narrow in scope, or at best limited to a few artists. International Glass Sculpture is by far the most comprehensive such exhibition ever organized.

Many people have helped make this possible. Ms. Carol Hotchkiss, Registrar of the Lowe, has served as the primary staff member responsible for co-ordination of this show and has done a marvelous job. New York City's Museum of Contemporary Crafts loaned the glass furnace, thanks to Director Paul Smith. Most of the slides used in the show's introduction were provided by Robert Willson and Kenneth Wilson from the files of the Corning Museum of Glass. Mrs. Anna R. Ceci-Knabb was most gracious in translating Mr. Gasparetto's introduction and other material from the Italian. Mr. Phillip Brodatz, Director of the University of Miami Photo Center, added his expert skills to making color and black and white photographs for the catalog. To these and the many others who aided—this marvelous exhibition is testimony to your long hours and diligent service.

What we all can experience here is an outstanding example of the major philosophy of the Lowe Art Museum, a philosophy that undergirds all our efforts: education, made interesting, entertaining, and thus enjoyable through creative approaches to the presentation of quality scholarship and the finest artworks available.

That has been and will remain our goal.

John J. Baratte
Director

HIGHLIGHTS OF THE HISTORY OF GLASS AS AN ART OF FORM

Glass as a medium for artistic expression seems to many to have only recently been "discovered" as such. It is generally accepted for its practical or functional uses, but has, in reality, been used for decorative purposes almost from its inception as man's first manufactured substance. Egyptian glassmakers of the 18th Dynasty (1450-1330 B.C.) produced amulets of opaque glass in various colors, representing numerous deities, as well as colored beads of various forms. There also survive some figures in profile view which are characteristic of 18th Dynasty stone sculpture and wall carvings. These were used as inlays in walls and furniture. Egyptian core-formed vessels, derived in form from stone prototypes, were used for such practical purposes as unguent and kohl containers. They were usually decorated with patterns of herringbone, "feather," and loop designs formed by colored glass threads imbedded in the bodies of the vessels. These artistic expressions were impossible to achieve in the production of stone containers.

In Mesopotamia, glass vessels formed by fusing short sections of colored glass rods together in geometric patterns were made at Marlik in the 13th century B.C. and beakers bearing highly sophisticated mosaic representations of figures and animals were produced in Hasanlu in the 9th century B.C. Certainly these glasses may be considered as art forms, rather than merely containers.

Near Eastern glassmakers, from the 8th century B.C. until about the time of Christ, made beads in the form of human heads—often grotesque—and also in the form of animal heads. These may have been cast then polished, or perhaps they were made by the lampworking technique. During Hellenistic times, at least a limited number of gold glass bowls, such as the Canosa bowls found in a 3rd century B.C. context, were produced. These vessels were made before the advent of glassblowing. They consist of two bowls of clear, almost colorless glass, closely fitted together with the gold leaf design between. They are sophisticated examples of a form of the glassmakers art which has not been surpassed, though the Parthians and/or Sasanians in Persia during the 2nd-4th centuries A.D. produced gold glass vessels of the same type using different techniques. Nor were they surpassed by the many Christian and Jewish gold glasses, called Fondi d'Ora, made from the 4th to 6th century A.D. in Italy and around Cologne.

Alexandria was the center of luxury glass production which resulted in fine art glasses, among them cameo and mosaic glass and "murrhines," which may have been agate-like glasses. While some of these objects could have been put to use as drinking vessels and containers, they were undoubtedly made as art objects and appreciated as such by those who could afford to possess them.

After the introduction of glassblowing, which led to the wide spread manufacture and use of glass, some production of luxury glass—as objects of art—continued. A wide variety of inlays, often including elaborate compositions of flowers, birds, and fish as well as geometric patterns, was produced and used architecturally and in furniture decorations. Cameo glass in the form of plaques, cups, and vases of various forms often bore mythological or religious scenes, or simply floral decorations. Some were made of as many as five layers, or casings, of different colored glasses, and carved with consummate skill to produce elaborate nuances and finely detailed representations. Millefiori and mosaic bowls, cups, and other forms were also a part of this luxury glass production. They were made in a great variety of patterns and multi-colored glasses, and sometimes included "portrait" canes.

Undoubtedly the diatreta, or "cage" cups, created in the 4th and 5th centuries A.D. in northern Italy and the Cologne area must be considered—perhaps along with cameo glass—as the tour-de-force of the ancient glassmakers, or, for that matter, of glassmaking of any period. These works of art were formed from blanks of glass whose walls were about one-half inch thick. From them, the glasscutter partially carved out with a wheel the intricate, deeply undercut designs which, when completed, surrounded the remaining thickness of the cup like a cage—the outer design attached to the body of the vessel by a series of small "posts" left remaining as the design was carved. Most of the diatreta which remain, or fragments of them, are a series of circles with a legend above—sometimes in multi-colored glass—but some diatreta also bear friezes of figures. The most outstanding and remarkable of all of these diatreta is unquestionably the Lycurgus cup, now in the British Museum. Here is portrayed the story of Lycurgus being strangled by vines on the order of Pan as a punishment for attempting to steal the grapes. In addition to this remarkable representation, the cup is almost unique in that it is made of a dichroic glass—one which, because of a colloidal suspension of minute crystals, appears to be opaque green in reflected light, but is transparent red or magenta by transmitted light.

Following the fall of the Roman Empire in the West, luxury glassmaking ceased there, and only simple utilitarian objects of unrefined green glass were made. In the late

Middle Ages glassmaking in the West began to revive, stimulated by the need for stained glass for the great cathedrals and other churches. Some of the most jewel-like windows were created in the 13th century for Chartres, St. Chapelle and other cathedrals and churches in France.

Islamic glassmakers produced a great diversity of glass between the 7th and 14th centuries. They exploited several decorative techniques to create their own distinct style. Relief cut and engraved glass bearing lively scenes of birds, ibex and geometric patterns was one of their outstanding accomplishments. Also peculiar to their culture and apparently very common from the 8th through the 11th centuries (but rare now) was their lustre decorated glass. In its manufacture, a thin metallic stain was employed to create lively and vivid depictions of birds and highly stylized floral and geometric motifs, mostly in varying tones of ambers and browns. Islamic glassmakers were especially noted for their elaborately enameled and gilded mosque lamps, bottles and other vessels, which are much sought after by museums and collectors today.

The influence of Islamic glassmakers was felt in Venice, where enameled and gilded vessels were much in vogue in the 15th and early 16th centuries. Enameling and gilding were done on both colored glass and the famed Venetian crystallo and included heraldic and legendary subjects as well as portraits and foliate and geometric designs. The Venetian glassmakers also became justly renowned for their delicate "dragon stem" and other intricately formed goblets of crystallo, often decorated with colored glasses. In the 16th and 17th centuries they produced innumerable patterns of filigree glass which have never been surpassed. Venice, or more accurately, Murano, had a tremendous influence upon the development of glassmaking in the Lowlands, Austria, Germany and even in England and Sweden, where, despite efforts of the Muranese to keep their glassmaking skills and secrets to themselves, the façon de Venice style developed. Though the results were seldom as well formed or as well articulated as the Venetian glasses, many fine "fluegel" and other Venetian style glasses were made in some of these areas. Diamond point engraving, which had also been introduced by Venetian glassmakers, was further exploited as an artistic expression in Austria, England and especially the Netherlands.

Venetian influence resulted in "German enameled glass" produced in quantity and in many forms in Germany, Bohemia and elsewhere from the late 16th century through the first half of the 19th century. In contrast to the more subtle Venetian enameling, German enameled glass was bold and almost garish, tending to be more of a folk art than a fine art, and encompassed a wide variety of subject matter.

In the early 17th century, engraving on glass, which had not been practised in the Western world since the fall of Rome, was revived. Its revival is generally credited to Caspar Lehmann, a rock crystal cutter and engraver who worked in Prague. Because of the scarcity of rock crystal, he transferred his talents to glass, and others quickly followed his example. Bohemia and Germany became noted for their engraved glass in the 17th and 18th centuries. Highly detailed landscapes, hunt scenes, portraits and armorial devices of fine quality, in both intaglio and relief, were produced in such centers as Nüremburg and Potsdam.

In the early 19th century Bohemian glassmakers developed a fine color technology. This was often used to produce cased, or overlay, glasses—glasses made up of several layers of different colored glasses—which were then cut and engraved to expose the glass below. In addition, these Bohemian glasses of the Biedermeier period were frequently further decorated with enameling and gilding. From about 1840 onwards, this Bohemian style exerted a strong influence on other European glassmakers, especially in Austria and France, as well as in England. The Bohemian style influenced a number of American glass manufacturers about 1850.

Transparent enameling was a decorative technique practised very successfully in Austria during the first 40 years of the 19th century. Exquisite views of churches, landscapes, romantic allegories, portraits and even maps were achieved by such artists as G. Mohn and his son, and Antoine Kothgasser and their followers, but little work of this kind was done elsewhere.

Fine engraved glass continued to be made in Bohemia throughout most of the 19th century. Dominick Bimann, who worked in Prague and elsewhere between 1826 and about 1855, produced some of the finest engraved glass ever made. Outstanding among his work are portraits engraved on beakers and round plaques showing deep sensitivity and physchological insight, as well as a complete understanding of anatomy and physiology. The demand for spa glasses as souvenirs resulted in numerous artistic glasses of varying degrees of quality, often bearing representations of various spas, engraved by artisans living in the vicinity of these spas.

From 1875 to 1900, Art Glass, as it was then termed, was very popular. It was produced principally in England, America, Bohemia and Austria, and was the result of the late Victorian taste for colorful and ornate objects, combined with a colored glass technology based partly

on earlier Bohemian work and partly on contemporary scientific experiments. Many of these Art Glasses, which were often intended to be supported in silver plated stands, did not look like glass but more like porcelain or hardstones. Bi-partite glasses such as Amberina and Burmese were especially popular. The latter was often decorated with enamels and gilding as was opal glass and other art glasses like Peach Blow, Crown Milano, and Royal Flemish.

As the 19th century drew to a close, the Art Nouveau style developed and found one of its foremost expressions in glass. It, like Art Glass, was an "international" style. It was initiated in Europe by Eugene Rousseau and developed and promoted by Emile Gallé. Daum-Nancy and Rene Lalique were among others noted for their work in this style. Louis Comfort Tiffany, who had previously gained recognition for his stained glass windows, began to produce glass vessels in 1892, and became the chief proponent of the Art Nouveau style in America. Again, though most of his Favrile glass, as he termed it, could be put to functional uses, it was often intended primarily as objets d'art.

Though glass continued to be made in this manner until about 1930, the Art Nouveau style had basically run its course ten years earlier. It was succeeded in the field of glass by what has come to be known as the International Style, which was initiated by Simon Gate and Edvard Hald of the Orrefors Glass Works in Sweden. They were responsible for developing a new style of engraving which was a combination of sophistication and simplicity—first on thin, delicate glasses, then on thick, heavy forms, which came to be identified with Scandinavian glass. The work of these two artists—the first ever to be employed as designers by a glass factory—had a tremendous effect upon glass design throughout Europe and to a lesser degree in America.

During the 1920's, limited quantities of glass in the Art Deco style were produced, primarily in Europe. In contrast to the fluid, sensuous lines of the Art Nouveau style, Art Deco glass projects an image of solidarity, squareness and stark simplicity—related in many respects to architecture of the Bauhaus principle. Daum-Nancy, Schneider, LeGras and Charder were among the firms producing glass in this style. Part of the work of Maurice Marinot, a painter of Les Fauves movement, who began to work with glass in an artistic manner in 1910, also exemplifies the Art Deco style. He continued to design and fashion glass, usually working alone, sometimes with the aid of one helper in a friend's bottle glasshouse in Troyes, until 1936. He was one of the first—if not the first—artist-craftsman to work directly with the glass itself to form his own creations. He, along with a few others, such as Jean Sala, was a forerunner of today's Studio Glass Craftsmen, and has had considerable impact upon the Studio Glass Movement which began here in America in 1962 when the first workshop on glassblowing was held at the Toledo Museum of Art.

This movement has developed rapidly since then, resulting in much experimentation with glass as an artistic medium. Its growth has not been restricted to this country. It has inspired and influenced Studio Craftsmen there, but also in some of the larger glass factories, such as Kosta in Sweden, Leerdam in the Netherlands and Rosenthal in Germany. Though it is true that these and other noted glass firms still devote only a relatively small part of their production to purely "artistic" works of glass, there seems to be a trend by glass manufacturers to recognize the demand for such glass. This is true of Steuben Glass, where more and more sculptural and engraved glass designs are being produced.

The 160 glass sculptures in this exhibition are the work of individual designer-craftsmen in America and Europe working directly with glass to achieve works of art, and of the earlier tradition of glass craftsmen in such factories as Daum producing glass sculptures from the designs of noted artists, including Picasso, Arp and others. Undoubtedly, this initial exhibition with its international scope will be noted in the future as a milestone in the recognition of glass created soley for aesthetic purposes.

Kenneth M. Wilson
Chief Curator
The Corning
Museum of Glass

THE TENDENCY OF MODERN GLASS SCULPTURE

What does the dictionary say—every dictionary, except negligible varieties—of the word "sculpture"? Approximately this: "Art represented by raised forms, made of a material more or less durable, depicting forms of living beings or other things." This definition shows how the philologists have not yet absorbed the newer and broader position that in the last quarter century the term "sculpture" has assumed. Critical thought has crossed the arbitrary barriers of academic delineation among so-called "major or beautiful" arts and so-called "industrial, or minor, or decorative" arts, and has justly attributed the title "sculpture" to whatever creative work produces three-dimensional objects and to whatever plastic works that rate the dignity of art. A statue, an abstract composition, or an everyday object—bottle, glass vase, etc.—are all equally entitled to be called sculpture.

Thus it seems necessary to impress upon the public that art, when dealt with truly, knows no discrimination because of direction. Therefore, we can further enhance the new definition by adding non-utilitarian sculpture: that which pursues purely expressive finality and has been important since ancient times. Such sculpture has generally been made of soil, wood, stone, marble, or bronze, to the point that, when dealing with a display of works made from these materials we call it an exhibition of "tout court" sculptures. But if the works are made of materials different from the traditional ones, it is necessary, just as we have here, to make special mention of it.

One of these less common materials is glass, although we have numerous examples of glass sculpture made in ancient times. We only have to think of Egypt, of the "shawabti" of the XVIII Dynasty and of the statuettes of divinities produced there especially during the Ptolemaic period; and of the first four centuries of the Roman Empire and their cameo glasses (because the art of glyptic is also sculpture); relief containers called "fitomorfi," "zoomorfi," and "cefalomorfi"; vases with fish decorations and all-around shells; and the prodigious "diatreta." Later, from the 9th to 11th centuries, the Islamic Orient developed a high peak of quality intaglio on glass. And still much later, in 16th and 17th century Venice, there resumed, in reduced measure, production of some objects of vitreous Roman plastic, and in Bohemia and Germany during the Baroque Period artisans emulated in another spirit but with equal mastery the great Arab and Persian glass carvers.

The powerful vein of useful glass in the course of the centuries has expressed itself in absolute or pure plastic form, free from even remote reference to the reality of visible nature, and therefore has been authentically abstract. This aspect often has been intertwined with another and no less evident glass form which is thought of as the product of boundless fantasy, with only incidental or casual ties with any practical destination or use. These latter forms did not separate themselves, except where the decoration recalled geometry, from forms found in the natural world. On one side, then, we have utilitarian sculptures of glass, all necessarily non-figurative; on the other are those forms purely expressing an end unto themselves and all prevalently figurative.

Glass as art, especially this second, non-utilitarian type, has, since 1953 (above all to the merit of Venice), showed successful experiments with an approach to glass by "pure" artists. This has been of great importance for the international push of the so-called art of glass; the non-utilitarian type has almost completely unchained itself from naturalism. If naturalistic echoes persist, they are seen in a completely different way than in the past, rich with infusions and deformations brought sometimes to pure symbolism with allusions to objects of nature. Or, on the contrary, we see photographic representations of objects but in situations so far removed from reality as to have them appear like objects seen in a dream, with a verism derived from the graphics of "cartoons" and "advertisements." And we see so much of the more controversial, the more subjective and more sensual, with accents of lines, volumes and colors turned toward expressing the intimate essence of persons and things, with the reduction of the design to a synthesis which reminds one of the neolithic graffiti of those so-called primitive populations. There are also forms where recollections of the visible are lacking, forms wholly invented and not intended to reproduce anything from nature because they claim themselves as pure productions of the spirit, therefore equal if not superior in reality; and there are geometric forms arranged according to well-studied spatial relationships; non-fixed and changeable forms, or those that appear and disappear, the same or different, in a dynamic play of lights regulated by definite mechanisms; or casual forms taken from fragments of brute matter; completely new shapes suggested by the macrocosm and by the recently-begun exploration of the microcosm of organic and inorganic life; and "multiple" forms, conceived as "open" works, whose final composition is left, with the possibility of many variables, to the inventiveness of the viewer. These are the shapes, some of which were first introduced

by painting but then transferred to sculpture and particularly to the medium of glassware. They now can and do express all those sentiments aroused by the interest for man and his world and for nature by a religious faith or a political ideology that at one time had no other means of being communicated other than reproduction of real objects.

In a word, all the trends of modern art—from distant cubism, futurism, figurative expressionism and action painting, to op art and multiple "vasareliani"—are today present in the non-utilitarian form of glass sculpture. This international exhibition includes alongside the famous names in the art world those who are of lesser fame, but whose works are of no less interest.

Just as the art of today, in general, rejects the naturalism of another time, artists over the past twenty years or so have been drawn to glass where they have found the ideal medium to realize their visions. Glass, different from all other materials, assumes in itself the utmost docility toward being formed. It has the possibility of being treated regarding its mass, and its surface allows many techniques that can confer different aspects. Its imminent chromium-like plating is also transparent, permitting the capacity of an infinite number of reactions to light. In fact, artists who work in glass see this multiplicity of properties as possibility for expressing forms not strictly tied or bound to even a sensitive nature. They also see in glass means for the perfect integration of painting and sculpture. The sculptor, who usually works in traditional materials, must additionally dominate color when working in glass; the painter who makes three-dimensional works with glass cannot ignore facing and resolving plastic problems. A simple glance at the artists and works represented in this exhibition is sufficient to show how many pure sculptors, by virtue of their works in glass, have revealed themselves as excellent painters, and vice versa.

In conclusion, we can say that having overcome the distinction between industrially-produced items (wherein a series of objects for everyday use is created by industrial designers) and of pure works of fine art (those non-useful objects created by artists directly, by means of a "translator," or alongside a great craftsman), modern criticism acknowledges any creative process that is truly autonomous whether or not an object is purely expressive. It must only reflect the dignity of art. Consequently, between utilitarian sculpture in glass (usefull glassware) and non-utilitarian sculpture in glass (the so-called glass artworks) one cannot establish a hierarchy. There are perfect works of art in the first type as well as the second. If a negative limit is applied to the art in the first instance regarding its expression of content, of the function on the form, then in the second case (non-utilitarian) the negative limit may be its sensualism, estheticism of material, its technique and resulting effects, or of the free form itself.

Astone Gasparetto
Director,
Instituto Veneto per il Lavoro

THE PERFECTION OF GLASS...AN ARTIST'S VIEW

There is a certain poetic romance about the vision of glass made into sculpture. Today's brilliant and abstract forms capture, reflect, and refract light in ways not possible for other materials to duplicate. Yet glass as a sculptural medium is not isolated in its development, nor is the urge to use this "new," diamond like material for creative work.

Barely 5,000 years old, creative use of glass shows a straight line of descent beginning with the glass beads of the very ancient milleniums; the 18th Egyptian Dynasty (Amarna) blue glass royal head on display in the Louvre; the Roman glass portrait of Augustus, now in Koln; the Persian glass paste head of a prince from Persepolis; Art Nouveau experiments of Louis Tiffany, Frederick Carder, Emile Galle, Maurice Marinot, and Rene Lalique; and the more modern hand glass work which has survived, especially in Italy.

There have been two periods in the history of man when glass as an art medium played a major role. Byzantium's glass mosaics stand out as one, and the great glass windows of the Gothic cathedrals as the other. May we think of tomorrow as the next great glass era? And glass sculpture as its form? Certainly we have the fabric and artistic potential.

It is important that the University of Miami's Lowe Art Museum presents this first American exhibition of esthetic glass sculpture in depth and in its proper international context. Although there have been many glass art shows in this decade, the Lowe is the first to document the sculptural use with a comprehensive understanding of the many trends, ideas, movements, groups, and techniques. Glass sculpture is here seen separately from the general history of glass crafts and commercial productions. A need has been fulfilled; this show is a beacon.

Importantly, the exhibition is a pleasure to view. The innate magnificence of the glass material and the variety of works shown seem to cause in visitors a physical and sensual reaction. Adding to the impact is the use of light, so very vital to glass. The happy result for the public is a dramatic realization of the potential of glass as art.

Perhaps this feeling on the part of the viewer stems from what the Venetians call "the fever," a compulsive type of action by the artist full of a real lust to do creative work in glass. During the last decade many artists have found this phenomenon of attraction and manipulation well suited to their own attitudes, and that use of this splendid material can be a satisfying way of life.

Perhaps we are already in the Age of Glass. Glass—the fabric, the metal—has properties unlike any other, properties that can make sculpture come alive. Thus glass can be the most vital of materials for the artist of today, or of the future. Although they cannot be easily measured, these are the major characteristics of glass as a medium:

a) Transparency. One can see into and through massive glass pieces. Form floats inside glass. As the light source moves through the day, continuing changes occur. Light is one of the sculptor's tools, and becomes more vibrant in solid forms than in blown shapes.

b) Tension. The movement of molten glass while it cools sets up stress forms which are more sensed than seen. This dramatic element is an extension of the use of transparency, and again of more value in solid glass than in hollow shapes.

c) True color. Compared to color which is only reflected from a painted surface, color seen through glass is pure. The white light of the sun, passing through a prism, yields fresh and clean color. Emotional in its richness, it is the truest of color.

d) Permanency. The color of glass does not fade; the fabric does not change. A piece of glass in my own collection, made some 3,500 years ago in Egypt, retains the shine of newness as if made today.

e) Brilliance. As in a diamond, the juxtaposition of lights, colors, reflections, and movements combine to make glass into living form.

Methods of working in glass have endless variations. Some artists confine their efforts to small studio furnaces and the type of blown glass one person can finish without helpers. This direction is most prevalent in America. Others prefer the opposite extreme and work in a professional factory, with its complexity of specialists, chemists, heavy equipment, varied glasses, and teams of helpers (more common in Europe). Some artists only design for glass and do not concern themselves with the craft of production. As can be seen in this exhibition, any method can be used to produce valid works of art.

An unusual approach to glass sculpture is made by Egidio Costantini of Venice. He acts as a poet who interprets the drawing or art idea of the artist; he himself directs the glass maestro who makes the glass sculpture in the factory. It is a rare meeting of creative spirits, resulting in important sculptures. These are unique experiments, not likely to reappear again soon, and they add another dimension to the field of glass sculpture. Picasso, Miro, Braque, Arp, Coignard, Cocteau, and Ernst are some of the talents Costantini has worked with.

Many techniques are available to the artist for working glass. Casting, carving with a chisel, engraving, sandblasting, the pate-de-verre method redeveloped by Daum, blowing hollow forms, assemblage of separate pieces, tooling or shaping heavy molten glass (more used in

Europe), sagging, leading, and flame or lampwork (Burton) are some ways of controlling glass. It is encouraging to note that most artists are not tied to any single technique; witness the works of Toso, Barbini, Moretti, Lipofsky, Heesen and others.

An example of leadership in developing a glass technique is the glass paste (pate-de-verre) sculpture promoted by Jacques Daum, president of the Daum Glass Works of Nancy, France. Although Daum is rightly noted for his crystal, the paste sculptures of artists such as Dali and Cesar point to new areas and add zest to the French glass image.

As an artist, I am encouraged by two very different glass movements in America. One is the wide expansion of college-level teaching of glass blowing courses, along with the proper training in design available in the art departments. The direct result is the establishment of a hundred or more individual studio glass workers in the United States, usually with small equipment, trained and interested in experimenting. (Roberto Moretti, who works in factory conditions with heavy glass, is a leading exception.) The future promises worthwhile products from these artists.

The second significant occurrence in our country is the growth of home glass plants on farms scattered chiefly through Arkansas, Oklahoma, and Colorado. These rule-of-thumb glass houses represent one of the few truly American folk crafts that survives. Unfortunately, the workers are not trained in art and design, and to date they produce works only for the side-of-the-road tourist trade. This is a solid base for development, however, and perhaps as real as college training in art.

The word "craft" should be explained in relation to glass. Most contemporary artists, especially in America, have come to resent any implications that their works are crafts. The word has come to mean a lesser work, showing good technique but low in art quality. Yet all over the world I have found men in glass plants who are proud to be glass craftsmen. Just as definitely, they do not want to be known as artists. "How do you take the time to think up these sculptural ideas," one master craftsman said. "It would give me a headache."

I think that despite the past generation of writers' attempts to equate craft with art, the word "craft" is a good one, having its own meaning, and will be kept and used properly by most of us.

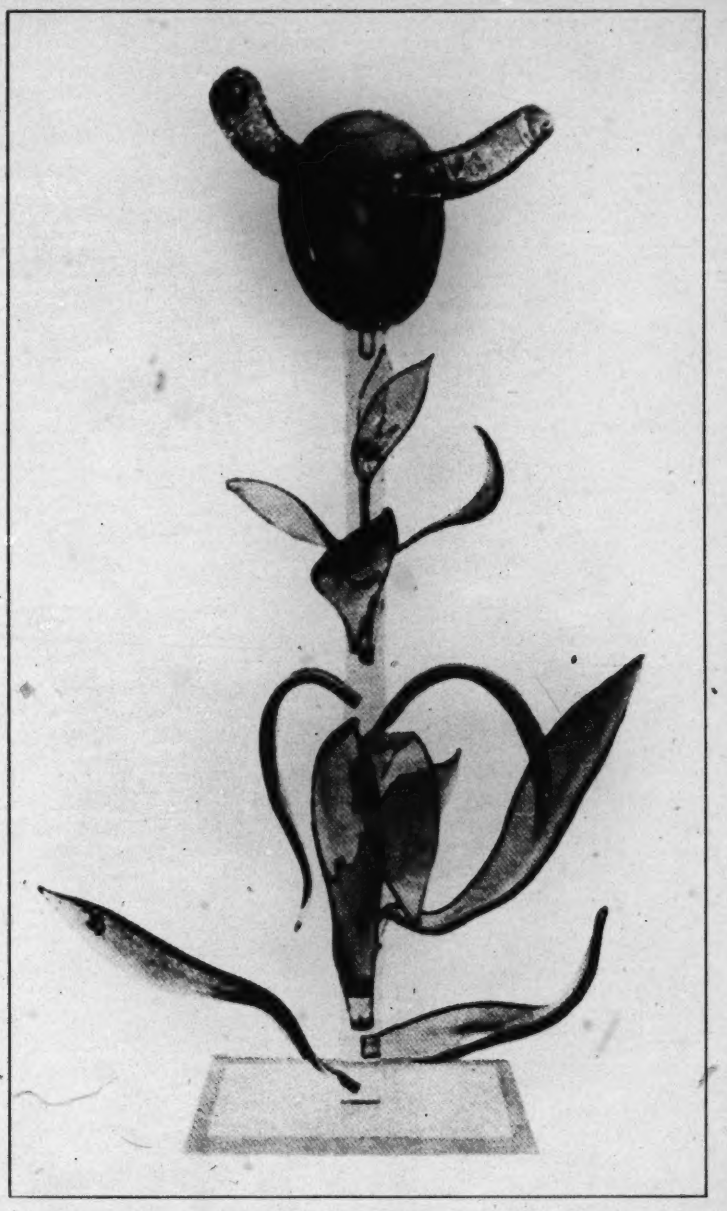
A further complication intrudes when one considers our age of great industrial craft production by machines. We are in danger of losing our ability to distinguish craft from art. The point of bitter departure is that the two are not the same. And, the sense of consumer taste and needs so essential to the designer-craftsman of utility ware may be of small value to the sculptor, who must cut across current fads in art.

It is my opinion that glass sculpture in America will become more important only when the artists move into the glass factories (as they have in Europe) of West Virginia and elsewhere. Full potential can be realized only where the tools and skills are—in the factories. That is where the action is.

The mere thought of glass is an exotic idea. Glass itself is a magic material, bringing a sensual satisfaction to the artist, craftsman, and patron. It is so self-contained in its quality that even a broken fragment is exciting. Glass helps the artist reach beyond his own abilities.

The Lowe Art Museum's concept for this International Glass Sculpture exhibition is readable. At last the field of glass sculpture is shown in its proper wide scale of reference. The variety is obvious, and encourages future growth. This exhibition will be influential for a decade.

Robert M. Willson
University of Miami



4 Jean Cocteau, **Face (Reality),** 1966, 12" high. Collection of Mr. and Mrs. Arnold A. Saltzman, New York.

12 Attilio Sinagra, **Forma Liquida,** 1966, 17-1/2" high. Made at Fucina degli Angeli by Costantini. Collection of the artist.

Cosantini

Edigio Cosantini is a glass poet, an interpreter of the artist's drawing but in a very personal manner. He takes the place of the artist at the furnace. Perhaps the idea is best described in his own words:

"My ideal for Venetian glass was that it should rise above its admitted ancestral skills, and should reach poetic and marvelously creative intensity. To this end, I talked with major artists all over the world and asked for drawings to be used in my search for glass. We drank a glass of wine and agreed. The great artists know how to help generously, and they gave with spirit. I in turn gave shape and dimension to the ideas expressed in the drawing."

1 Jean Arp, **The Family,** 1966, four pieces: 18", 15", 12" and 10" high; ed. 3/3. Collection of Mr. and Mrs. Arnold A. Saltzman, New York.

2 _____, **Newlyweds,** 1966, two pieces: 20" and 18" high; ed. 3/3. Collection of Mr. and Mrs. Arnold A. Saltzman, New York.

3 Antonio Clave, **Fisherman,** 1964, 18" high; ed. 1/3. Collection of Mr. and Mrs. Arnold A. Saltzman, New York.

4 Jean Cocteau, **Face (Reality),** 1966, 60" high; ed. 1/3. Collection of Mr. and Mrs. Arnold A. Saltzman, New York.

5 _____, **Billy Goat,** 1966, 12" high; ed. 1/3. Collection of Mr. and Mrs. Arnold A. Saltzman, New York.

6 _____, **Cyclops,** 1965, ed. 1/3. Collection of Mr. and Mrs. Arnold A. Saltzman, New York.

7 _____, **Goat,** 1966, 12" high; ed. 3/3. Collection of Mr. and Mrs. Arnold A. Saltzman, New York.

8 _____, **Face (Dream),** 1966, 84" high. Collection of Mr. and Mrs. Arnold A. Saltzman, New York.

9 James Coignard, **Ancestral,** 22" high; unique. Collection of Mr. and Mrs. Arnold A. Saltzman, New York.

10 Raimond Dauphin, **Flower,** 2 pieces each 26" high. Collection of Mr. and Mrs. Arnold A. Saltzman, New York.

11 Max Ernst, **The Four Seasons,** 4 pieces each 10" diameter; unique. Collection of Mr. and Mrs. Arnold A. Saltzman, New York.

12 Attilio Sinagra, **Forma Liquida,** 1966, 37-3/8" high. Collection of the artist.

13 Dorothea Tanning, **Bonzo,** 10" high; ed. 1/4. Collection of Mr. and Mrs. Arnold A. Saltzman, New York.

14 Robert Willson, **Myth,** 16" high; unique. Collection of Mr. and Mrs. Arnold A. Saltzman, New York.

15 _____, **Stone Letter,** 1970, 15-1/4" high. Collection of Ray and Lee Grover.

Daum

Jacques Daum carries on his family tradition, begun in 1875, of producing fine art works in glass. His Nancy, France, glass works is most noted for the pate de verre method wherein the colored crystal is poured into a mould at 1800 degrees Farenheit, cooled slowly over a four day period, then removed from the broken mould, which was made from the artist's original model. This is opposed to the classical method of placing an amount of molten glass at the end of a long blowing-iron, then working and shaping it by blowing and tooling.

16 Badord, **Torso,** 1968, pate de verre, 17" high. Daum Cristallerie, Paris; Circle Gallery, New York.

17 Augustin Cardenas, **Petite Tendresse,** 1969, pate de verre, 7" high. Daum Cristallerie, Paris; Circle Gallery, New York.

18 Couturier, **Daphne,** 1968, pate de verre, 19-3/4" high. Daum Cristallerie, Paris; Circle Gallery, New York.

19 Salvador Dali, **Bande de Moebius,** 1970, pate de verre, 11-3/4" high. Daum Cristallerie, Paris; Circle Gallery, New York.

20 _____, **Cyclope,** 1969, pate de verre, 10" high. Daum Cristallerie, Paris; Circle Gallery, New York.

21 _____, **Porte-Manteau Montre,** 1970, pate de verre, 17-5/8" high. Daum Cristallerie, Paris; Circle Gallery, New York.

22 _____, **Guitare,** 1969-70, pate de verre, 23" high. Daum Cristallerie, Paris; Circle Gallery, New York.

23 _____, **L'Anti Fleur,** 1970, pate de verre, 15" high. Collection of Ray and Lee Grover.

24 _____, **IHS-150,** 1970, pate de verre, 19-1/2" high. Collection of Ray and Lee Grover.

25 Jean-Pierre Demarchi, **Chouette,** 1968, pate de verre, 7-1/4" high. Daum Cristallerie, Paris; Circle Gallery, New York.

26 _____, **IHS,** 1969-70, pate de verre, 11-1/2" high. Collection of Ray and Lee Grover.

27 Pierre Dmitrienko, **Le Cri,** 1968, pate de verre, 8-1/2" high. Daum Cristallerie, Paris; Circle Gallery, New York.

28 _____, **L'Ombre du Couple,** 1968, pate de verre, 8-1/2" high. Daum Cristallerie, Paris; Circle Gallery, New York.

29 Jean Claude Farhi, **Modulation Violette,** 1970, pate de verre, 17-1/2" long. Daum Cristallerie, Paris; Circle Gallery, New York.

30 Gleb, **Nefertiti,** 1969, pate de verre, 11" high. Daum Cristallerie, Paris; Circle Gallery, New York.

31 Legendre, **Solitude,** 1968, pate de verre, 10-1/4" high. Daum Cristallerie, Paris; Circle Gallery, New York.

32 Yehuda Neiman, **La Ronde,** 1969, pate de verre, 10" long. Daum Cristallerie, Paris; Circle Gallery, New York.

33 Paolo Santini, **Neutron,** 1968, pate de verre, 16-3/4" high. Daum Cristallerie, Paris; Circle Gallery, New York.

34 Robert Willson, **The Escort Stele,** 1972, pate de verre, 10" diameter. Collection of the artist.

35 _____, **The Archaic Horizon Stele,** from the American Indian Series, 1972, pate de verre, 10" diameter. Collection of the artist.

Europeans

Most European artists using this medium work in glass factories. As a result, they have capabilities of production not possible in the one man studio. Many artists work at the Barbini Glass Works in Murano, Italy, where Alfredo Barbini is the unusual example of factory owner, glass maestro and craftsman. The Fratelli Toso Glass Works is another popular location, also in Murano. Toso designers as a rule do not work with the glass directly, but with the resident maestros, Licio Zuffi and Vittorio Ferro.

36 Alfredo Barbini (Italy), **Untitled,** 1970, 8-1/2" long. Collection Ray and Lee Grover.

37 _____ (Italy), **Abstract Compostition,** 1972, 10-3/16" high. Alfredo Barbini, vetri artistici.

38 _____ (Italy), **Pesce,** 1960, 13" high. Alfredo Barbini, vetri artistici.

39 _____ (Italy), **Vulcano,** 1970, 13" high. Alfredo Barbini, vetri artistici.

40 _____ (Italy), **Formo Cristallo,** 1964, 9-7/8" high. Alfredo Barbini, vetri artistici.

41 _____ (Italy), **Formo Rosso,** 1966, 13-3/8" high. Alfredo Barbini, vetri artistici.

42 _____ (Italy), **Cubo,** 1970, 9-1/2" high. Alfredo Barbini, vetri artistici.

43 John H. Cook (England), **Untitled,** 1970, 8" high. Collection of Ray and Lee Grover.

44 _____ (England), **Friends in Conversation—Plogs,** 1970, two pieces each 9-1/2" high. Collection of Ray and Lee Grover.

45 Keith Cummings (England), **Untitled,** 1970, 6-3/4" high. Collection of Ray and Lee Grover.

46 _____ (England), **Untitled,** 1970, 10" high. Collection of Ray and Lee Grover.

47 Erwin Eisch, (West Germany), **Untitled,** 1965, 11-3/4" high. Collection of Ray and Lee Grover.

48 _____ (West Germany), **Untitled,** 1971, 13" high. Collection of Ray and Lee Grover.

49 _____ (West Germany), **Untitled,** 1965, 11-1/2" high. Collection of Ray and Lee Grover.

50 _____ (West Germany), **Untitled,** 1971, 22-3/4" high. Collection of Ray and Lee Grover.

51 _____ (West Germany), **Untitled,** 17" high. Collection of Ray and Lee Grover.

52 _____ (West Germany), **Untitled,** 1971, 10-1/4" high. Collection of Ray and Lee Grover.

53 Raoul Goldoni, (Yugoslavia), **The Skull,** 1972, 6" high; made at Barbini Glass Works, Italy. Collection of Ray and Lee Grover.

54 _____ (Yugoslavia), **Untitled,** 15-1/2" high. Made at Barbini Glass Works, Italy. Collection of Ray and Lee Grover.

55 _____ (Yugoslavia), **Untitled,** 10-1/4" high. Collection of Ray and Lee Grover.

56 _____ (Yugoslavia), **The Core,** 1972, 13" high; made at Barbini Glass Works, Italy. Collection of Ray and Lee Grover.

57 _____ (Yugoslavia), **Head of a Doe,** 1972, 6" high; made at Barbini Glass Works, Italy. Collection of Ray and Lee Grover.

58 Jon Gunderson (Norway), **Untitled,** 14-1/2" high. Collection of Ray and Lee Grover.

59 Willem Heesen (Netherlands), **HT 29,** 1971; made by the Glass Form Centre of Royal Leerdam, Netherlands, after a design by Mr. Heesen. Collection of Royal Leerdam.

60 _____ (Netherlands), **HV 2,** 1972; made by the Glass Form Centre of Royal Leerdam, Netherlands, after a design by Mr. Heesen. Collection of Royal Leerdam.

61 Pavel Hlava (Czechoslovakia), **Untitled,** 1968, 21-1/2" high. Collection of Ray and Lee Grover.

62 _____ (Czechoslovakia), **Untitled,** 19-1/2" high; blown, applied and trailed glass. Collection of Ray and Lee Grover.

63 Kěpkove (Czechoslovakia), **Iceberg,** 1971, 20-3/4" high. Collection of Ray and Lee Grover.

64 M. Legendre (France), **200,** 14-3/4" high. Collection of Ray and Lee Grover.

65 John Conrad Lewis, **Moon Bottle 1,** 5-1/2" high. Collection of Ray and Lee Grover.

66 _____, **Moon Bottle 2,** 4-3/4" high. Collection of Ray and Lee Grover.

67 Libensky, **Brechtova, Cubus,** 1967, 8-1/4" high. Collection of Ray and Lee Grover.

68 Rene Roubicek (Czechoslovakia), **Untitled,** 1971, 20" high. Collection of Ray and Lee Grover.

69 _____ (Czechoslovakia), **Untitled,** 1971, 15-1/4" high. Collection of Ray and Lee Grover.

58 Jon Gundersen, **Untitled,** 14-1/2" high. Collection of Ray and Lee Grover.

70 _____ (Czechoslovakia), **Untitled,** 1970, 11-1/2" high. Collection of Ray and Lee Grover.

71 M. Roubickova (Czechoslovakia), **Glass Bouquet,** 1971, 18" high. Collection of Ray and Lee Grover.

72 _____ (Czechoslovakia), **Kythova,** 1972, 11-1/2" high. Collection of Ray and Lee Grover.

73 Timo Sarpaneva (Finland), **Sarpaneva Lancet,** 9-3/4" high. Collection of Ray and Lee Grover.

74 Solviati (Italy), **Untitled,** 10-3/4" high. Collection of Ray and Lee Grover.

75 Dr. Spacek (Czechoslovakia), **Bridal Vase,** 12-1/4" high. Collection of Ray and Lee Grover.

76 Oiva Toikka (Finland), **Nuutajarvi Notsjo,** 6" high. Collection of Ray and Lee Grover.

77 _____ (Finland), **Nuutajarvi Notsjo,** 10-3/4" high. Collection of Ray and Lee Grover.

78 _____ (Finland), **Nuutajarvi Notsjo,** 8-1/4" high. Collection of Ray and Lee Grover.

79 Renato Toso (Italy), **Sun Form.** 1972, crystal, 18" high. Renato Toso; Fratelli Toso, Murano, Italy.

80 _____ (Italy), **Cube Light Form,** 1972, crystal and colored glass, 12" x 14." Renato Toso; Fratelli Toso, Murano.

81 _____ (Italy), **Harmony,** 1972, 8" high. Renato Toso; Fratelli Toso, Murano.

82 _____ (Italy), **Abstraction,** 18" high. Renato Toso; Fratelli Toso, Murano.

83 _____ (Italy), **Information unavailable.** Renato Toso; Fratelli Toso, Murano.

84 _____ (Italy), **Information unavailable.** Renato Toso; Fratelli Toso, Murano.

85 Helena Tynell (Finland), **Rihimaen Tase,** two pieces each 8-1/2" high. Collection of Ray and Lee Grover.

86 Sybren Valkema (Netherlands), **Leerdam Unica,** 11-1/2" high. Collection of Ray and Lee Grover.

87 Tapio Wirkkala (Finland), **Untitled,** 8" high. Collection of Ray and Lee Grover.

Americans Working in Europe

American artists who originally worked in other media have been turning their attention to glass, and have found they have fewer limitations of equipment and facilities by working in Europe. They have traveled to the glass factories already mentioned, plus those of Jacques Daum in Nancy, France, and the Royal Leerdam Glass Works in the Netherlands.

88 Paul Jenkins, **Astral Head,** 1970, crystal with color, 14" high; made at Fucina degli Angeli, Italy, Anonymous private collection.

89 _____, **Blue Presiding,** 1969, crystal with color, 21" high; made at Fucina degli Angeli, Italy. Anonymous private collection.

90 _____, **The Holders Loaf,** 1970, crystal with color, 23" long; made at Fucina degli Angeli, Italy. Anonymous private collection.

91 _____, **Buddha's Tooth,** 1969, crystal with color, 15" high; made at Fucina degli Angeli, Italy. Anonymous private collection.

92 _____, **St. George's Offering,** 1970, crystal with color, 15" high; made at Fucina degli Angeli, Italy. Anonymous private collection.

93 _____, **The Tide Mirror,** 1970, crystal with color, 16" high; made at Fucina degli Angeli, Italy. Anonymous private collection.

94 Marvin Lipofsky, **#6 Venini Series,** Murano, Italy, 1972, Marvin Lipofsky, courtesy of Venini, Murano.

95 _____, **#9 Venini Series,** Murano, Italy, 1972. Marvin Lipofsky, courtesy of Venini, Murano.

96 _____, **#10 Venini Series,** Murano, Italy, 1972. Marvin Lipofsky, courtesy of Venini, Murano.

97 _____, **#13 Buzzoni Series,** Gessate, Italy, 1972. Marvin Lipofsky, courtesy of Veterera Buzzoni with help from Roberto Niederer.

98 _____, **#14 Buzzoni Series,** Gessate, Italy, 1972. Marvin Lipofsky, courtesy of Veretera Buzzoni with help from Roberto Niederer.

99 Roberto Moretti, **Amplesso,** 1972, 13" high by 7" long. Collection of the artist.

100 _____, **Mother and Child,** 1971, 15" x 15". Collection of the artist.

101 _____, **Composition of a Woman,** 1972, 15" high by 8" long. Collection of the artist.

102 _____, **Silhouette on Space,** 1971, 20" high by 9" long. Collection of the artist.

103 _____, **Rage,** 1972, 18" high by 7" long. Collection of the artist.

104 _____, **The Pleasure of Resting,** 1972. Collection of the artist.

105 _____, **Fashion,** 1972, 20" high by 6" long. Collection of the artist.

106 Robert Willson, **The Moon,** 1970, 10" high; made at Barbini Glass Works, Murano, Italy. Collection of the artist.

107 _____, **The Chisel,** 1970, gold and silver in crystal, 18" high. Collection of the artist.

108 _____, **The Trail of the Wolf,** 1970, glass and gold trailed in crystal, 15" high; made at Toso Glass Works, Murano. Collection of the artist.

109 _____, **Sun Stella,** 1970, crystal, 14" high. Collection of the artist.

110 _____, **Reconstruction,** 1970, crystal, 18" high. Collection of the artist.

111 _____, **A People Box,** 1972, blown glass, 8-1/2" high; made at Barbini Glass Works, Murano. Collection of the Lowe Art Museum.

112 _____, **A People Box,** 1972, blown glass, 10-1/2" high; made at Barbini Glass Works, Murano. Shown at 1972 Venice Biennale. Collection of the Lowe Art Museum.

Americans in the Studio Tradition

Most of the glass produced in the United States comes from individual studios. A leader in this movement has been Harvey Littleton. In the studio situation, the artist is involved with all phases of design and production. Today, glassworking is taught in some 50 art schools, colleges and universities across the country. Many of the artists working in this manner have adopted other facilities for the specific needs of glass; Audrey Handler, working in Wisconsin, has converted an old cheese factory into her studio.

113 Andre Billeci, **Untitled,** 1973, glass and mixed media, 28" x 60" x 30". Collection of the artist.

114 _____, **Untitled,** 1973, glass and mixed media, 20" x 60" x 30". Collection of the artist.

115 Michael Cohn, **Blues Box,** 1971, 18" high by 6" wide. Collection of the artist.

116 _____, **Night Light,** 1973, 48" high by 24" wide. Collection of the artist.

117 _____, **Peter Voulkos Memorial Butt (Office Desk Piece #1),** 1971, 6-1/2" high by 5" wide. Collection of Peter Voulkos, California.

118 _____, **Dynamic Potential (Kit),** 1970-71, 5' square. Collection of the artist.

119 Boris Dudchenko, **Untitled,** 17" high. Collection of Ray and Lee Grover.

120 _____, **Untitled,** 15" high. Collection of Ray and Lee Grover.

121 _____, **Untitled,** 13-1/2" high. Collection of Ray and Lee Grover.

122 _____, **Untitled,** 16-1/2" high. Collection of Ray and Lee Grover.

123 Henry Halem **Blind Image,** 1972, cast glass, 14" high. Collection of the artist.

124 Audrey Handler, **Breakfast with Waffles and Egg,** 1973, glass and mixed media, 17 pieces: 15-1/2" high by 19-1/2" long. Woodwork by Ron Dekok. Collection of the artist.

125 Eric Hilton, **Gaidhealtachd,** 1972, glass and mixed media, 20" high by 48" long. Collection of the artist.

126 _____, **Mountain Dancer,** 1973, carved and sandblasted glass, 7" x 7". Collection of the artist.

127 _____, **Achinahuagh,** 1973, carved and sandblasted glass, 8" high by 20" long. Collection of the artist.

128 _____, **Magic Tree,** 1973, glass and mixed media, 30" high by 25" long. Collection of the artist.

129 _____, **Polar Route,** 1970, glass and mixed media, 18" x 18". Collection of the artist.

130 _____, **Wiggle with 5,** 1970, glass and mixed media, 36" x 36". Collection of the artist.

131 David Hopper, **White Glass #12,** 1972. Collection of the artist.

132 _____, **White Glass #8,** 1972. Collection of the artist.

133 _____, **White Glass #4,** 1972. Collection of the artist.

134 Kent F. Ipsen, **Untitled,** 1971, 12" high. Collection of Ray and Lee Grover.

135 Dominick Labino, **Forty Degrees West by North,** 1972, 7-3/4" high by 5-1/2" wide. Collection of the artist.

136 _____, **Spatial Movement,** 1972, 7-1/4" high by 8-1/2" wide. Collection of the artist.

137 _____, **Break-Through,** 1970, 9-1/4" high by 5" wide. Collection of the artist.

138 _____, **Sea Kingdom Reflected,** 1973, 6-1/4" high by 5-1/4" wide. Collection of the artist.

139 _____, **Cyclops,** 1973, 8" high by 5-1/2" wide. Collection of the artist.

140 _____, **Emergence XIV,** 1972, 10" high by 7" wide. Collection of the artist.

141 Harvey Littleton, **Untitled,** 13" long. Collection of Ray and Lee Grover.

142 Richard Marquis, **Capsule Scatter Piece,** 1971, 50 pieces each 1-1/4" long. Collection of the artist.

143 _____, **Lighting Rod Series: All in a Row,** 1971, 70 pieces: each 7-1/2" long. Collection of the artist.

144 _____, **Glass Spear,** 1973, glass and mixed media, 60" long. Collection of the artist.

145 _____, **Glass Spear,** 1973, glass and mixed media, 65" long. Collection of the artist.

146 Joel Phillip Myers, **Dr. Zarkov's Half Silver Double,** 1970-71, 9-1/4" high. Collection of Ray and Lee Grover.

147 _____, **Dr. Zarkov's Coffer,** 1971, 10" high. Collection of Ray and Lee Grover.

148 _____, **In My Garden,** 1973, blown glass and decals, 7-1/2" high. Collection of the artist.

149 Robert E. Naess, **Personal Hygiene,** 1971, five pieces each 6-1/2" high. Collection of Ray and Lee Grover.

150 _____, **Foetus Charm,** 1969, 15-1/4" high. Collection of Ray and Lee Grover.

151 _____, **Flying Pie,** 1970, 4-1/4" high. Collection of Ray and Lee Grover.

152 Eriks Rudans, **Chained Blue,** 1972, glass and mixed media, 40-1/2" high by 24" long. Collection of the artist.

153 _____, **Black Cluster Form #3,** 1972, glass and mixed media, 24" high by 36" wide. Collection of the artist.

154 _____, **Cluster Form #5, (White Glass Cluster),** 1972, glass and mixed media, 60" high by 20" wide. Collection of the artist.

155 Jack A. Schmidt, **Game Board 25,** 1973, 5" high by 12" long. Collection of the artist.

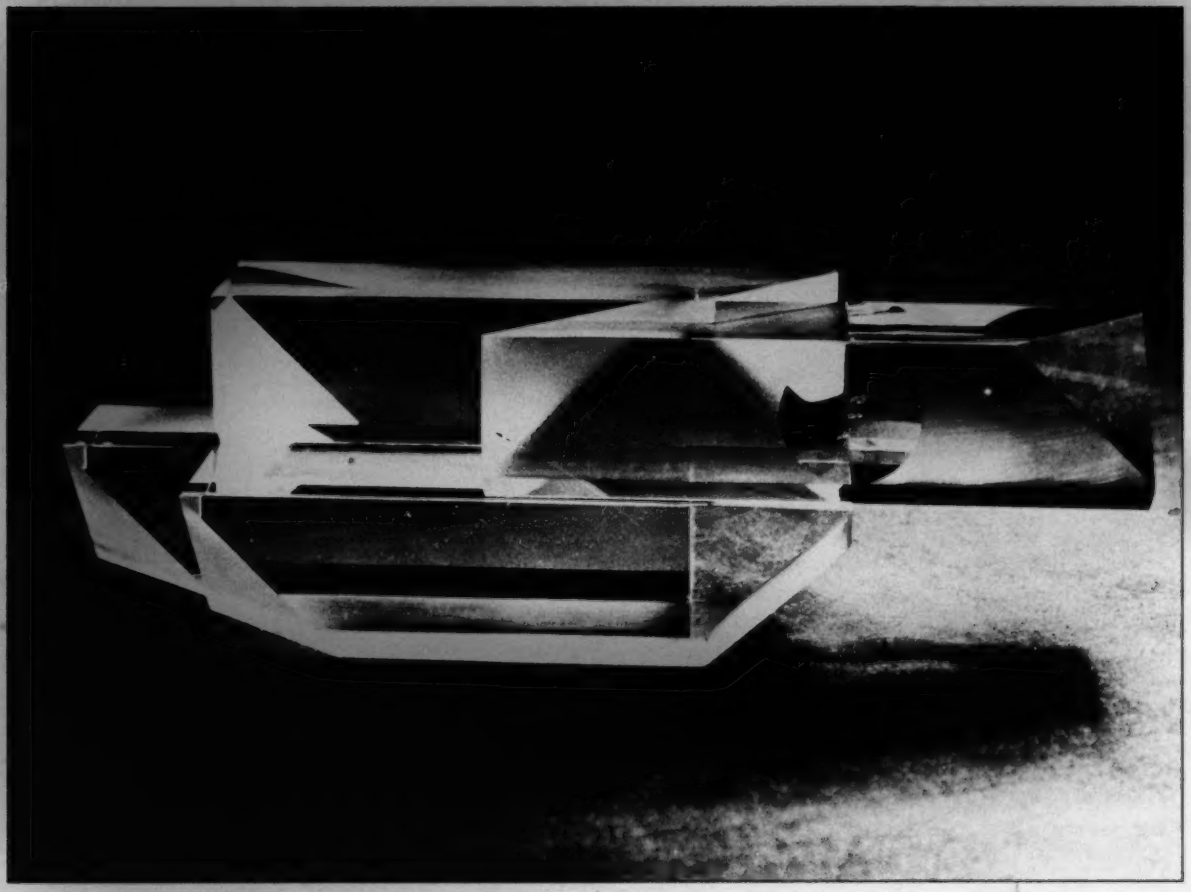
156 _____, **I.T. Game Board,** 1973, 6-1/2" high by 20" long. Collection of the artist.

157 _____, **Game Ball,** 1972, 8" diameter. Collection of the artist.

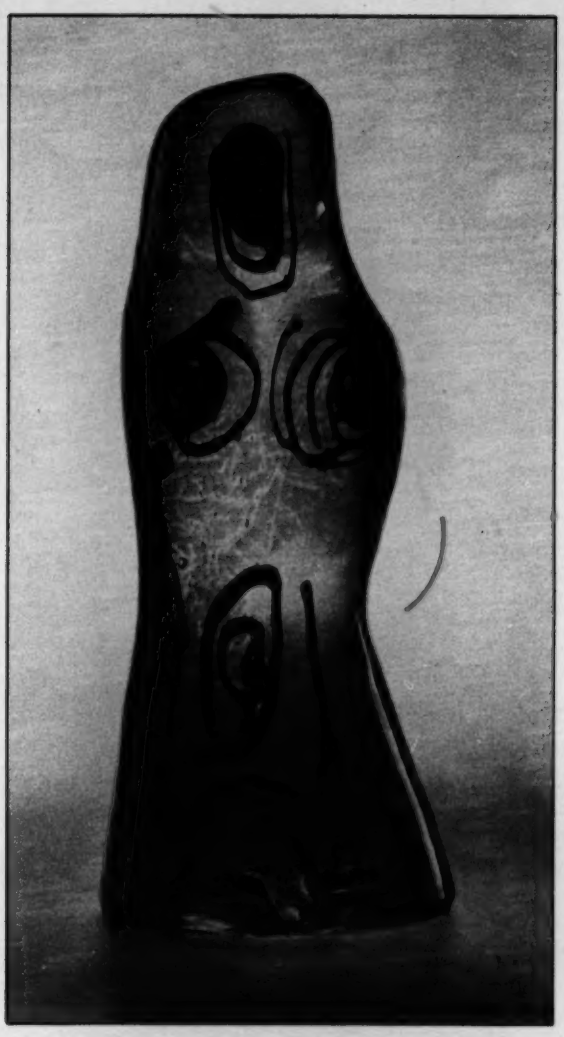
158 Jim Tanner, **Missing Wing,** 1971, 6-1/2" high. Collection of Ray and Lee Grover.

159 _____, **Untitled,** 1972, 4-1/2" high. Collection of Ray and Lee Grover.

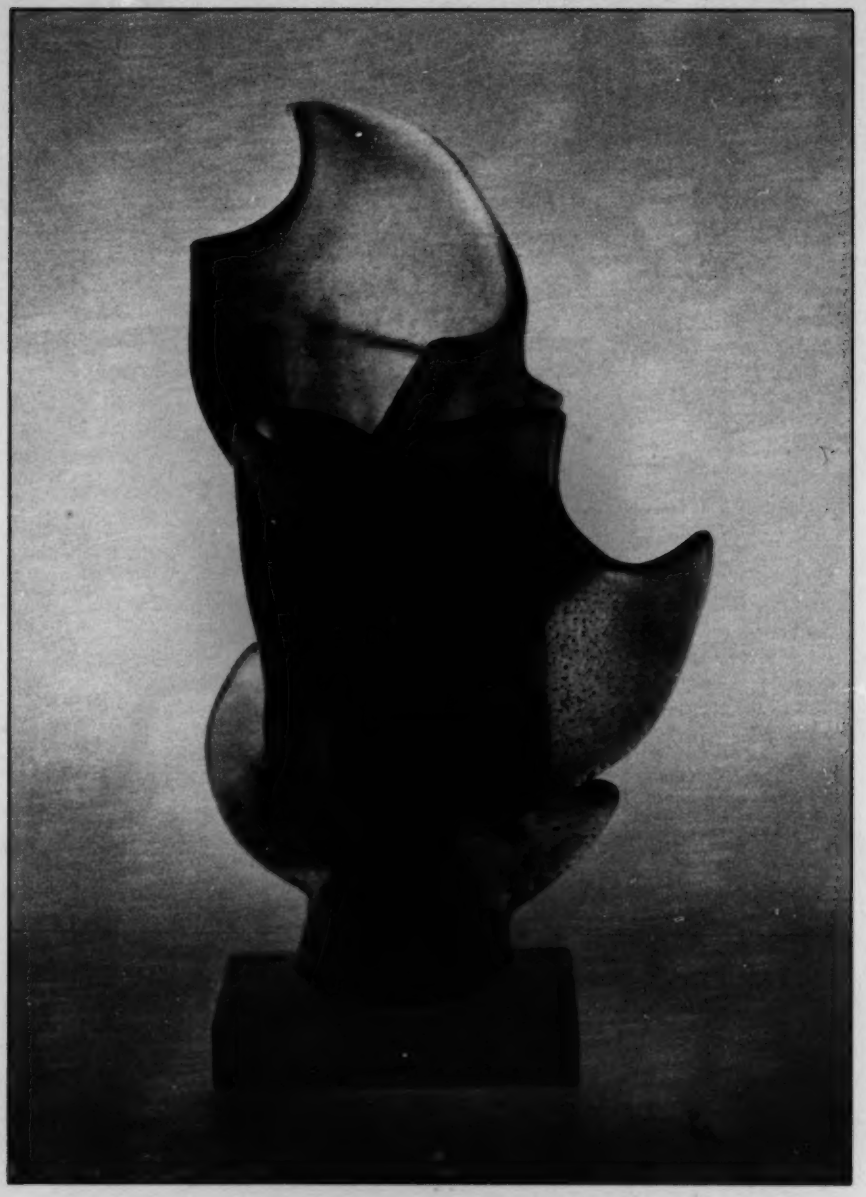
160 Jan Zandhuis, **Untitled,** 1973, 29" x 36" x 38". Collection of the artist.



59 Willem Heesen, **HT 29,** 1971, made by the Glass Form Centre of Royal Leerdam, Holland, after a design of Willem Heesen.

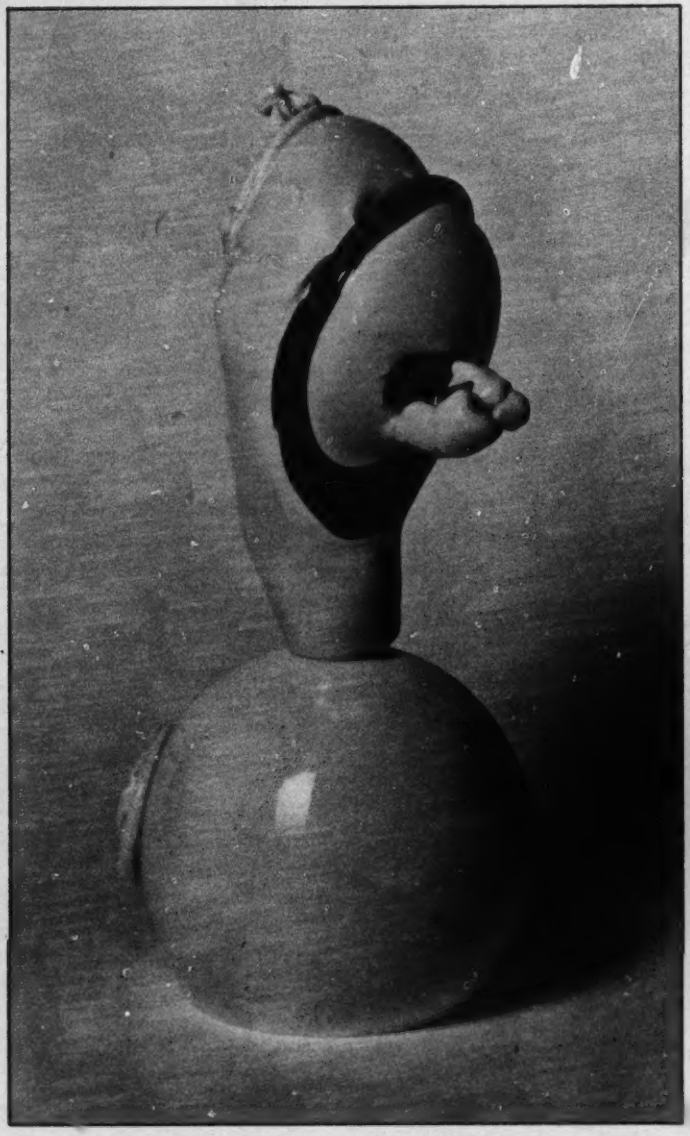


14 Robert Willson, ***Myth***, 1970, 15-1/4" high. Collection of Mr. Arnold A. Saltzman, New York.



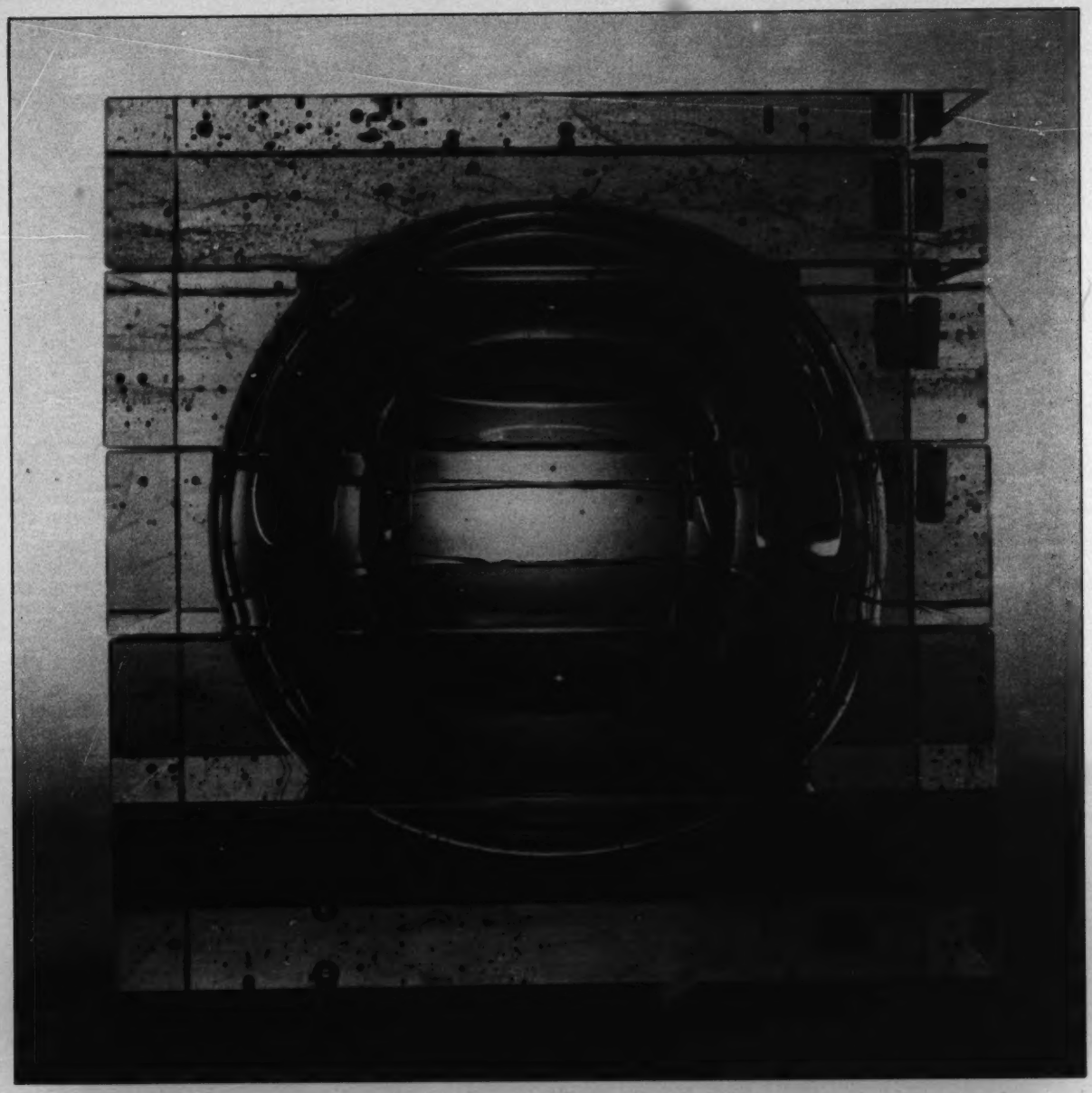
23 Salvador Dali, **L'Anti—Fleur,** 1970, 15-1/4" high. Collection of Ray and Lee Grover.

38 Alfredo Barbini, **Untitled, Abstract Composition,** 1972, 10-3/16" high. Alfredo Barbini, vetri artistici.

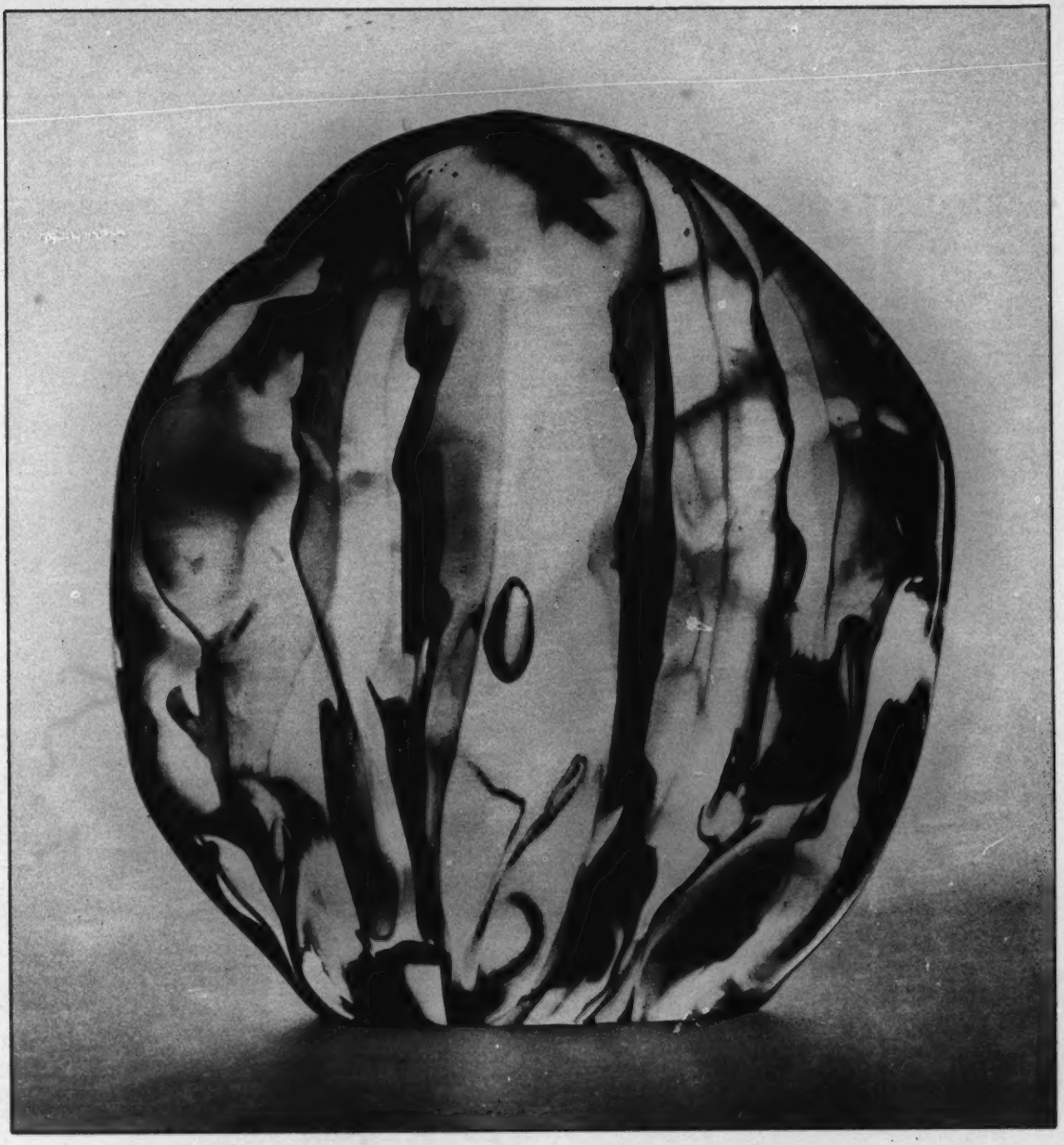


51 Erwin Eisch, **Untitled,** 17" high. Collection of Ray and Lee Grover.

55 Raoul Goldoni, **Untitled,** 10-1/4" high. Collection of Ray and Lee Grover.

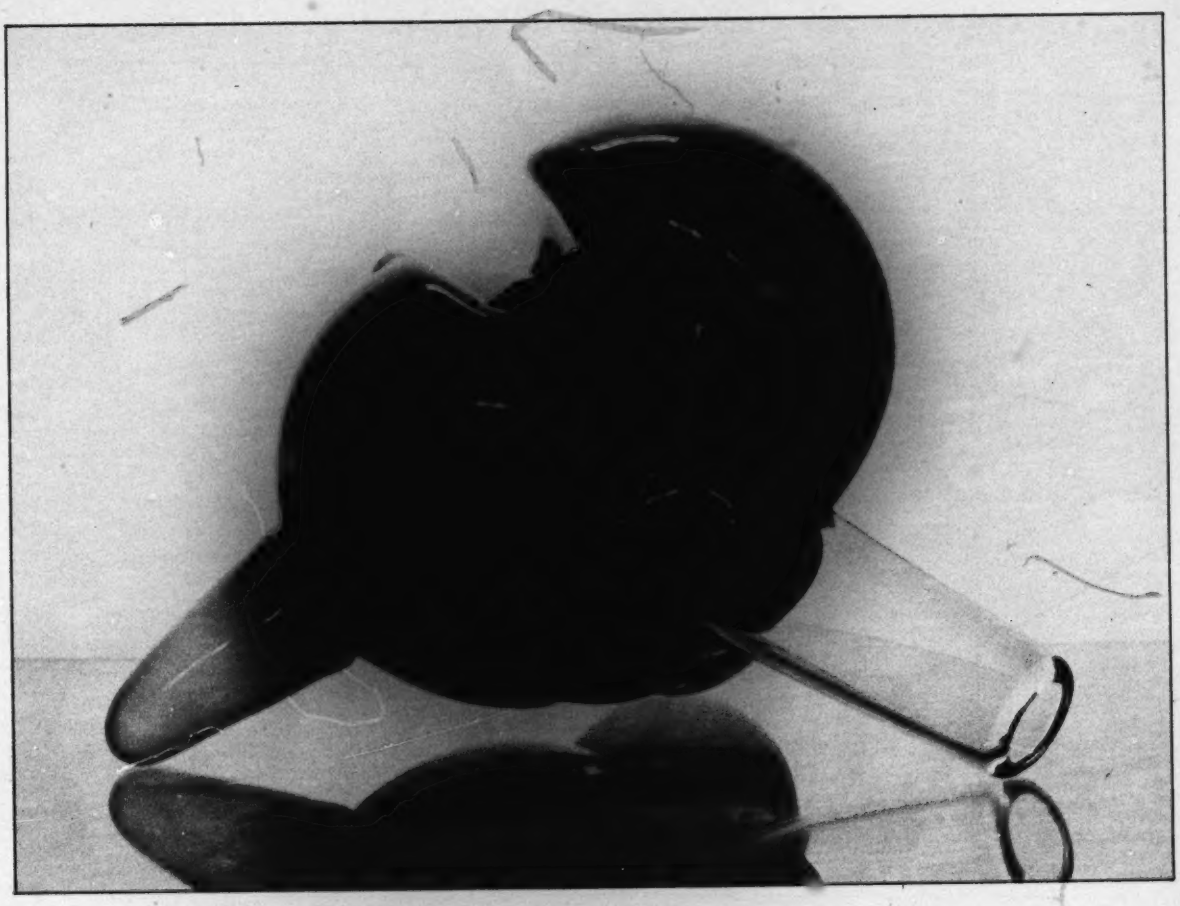


67 Libensky, **Cubus,** 1967, 8-1/4" high. Collection of Ray and Lee Grover.

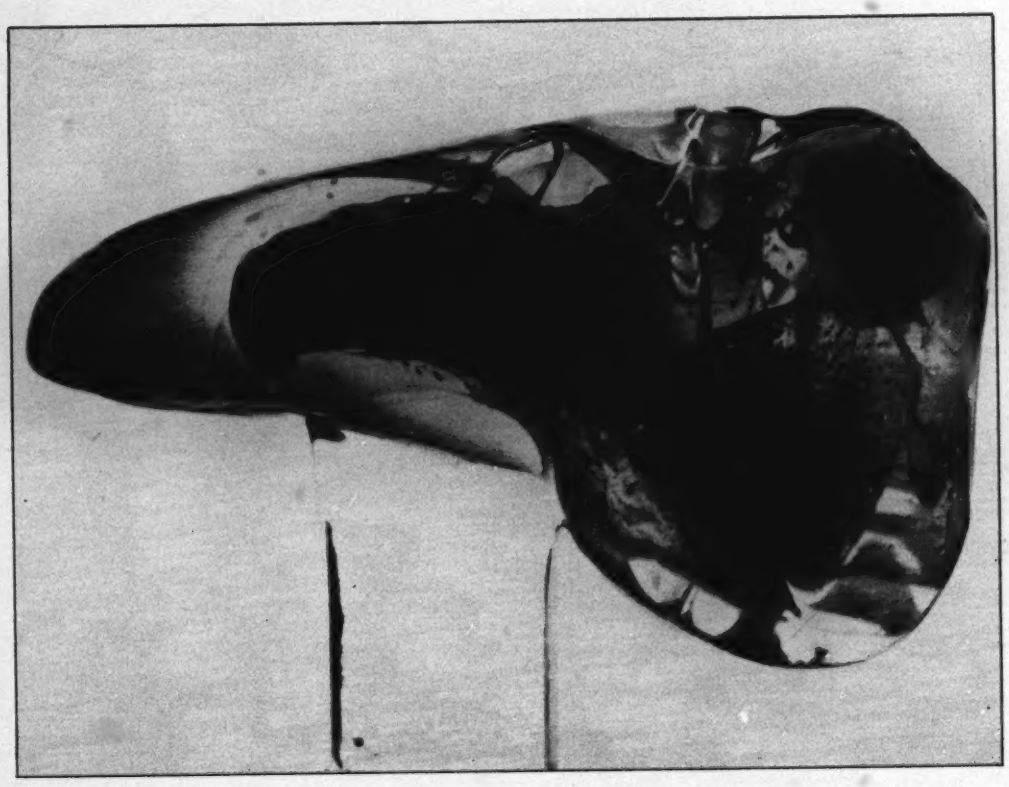


74 Solviati, **Untitled,** 10-3/4" high. Collection of Ray and Lee Grover.

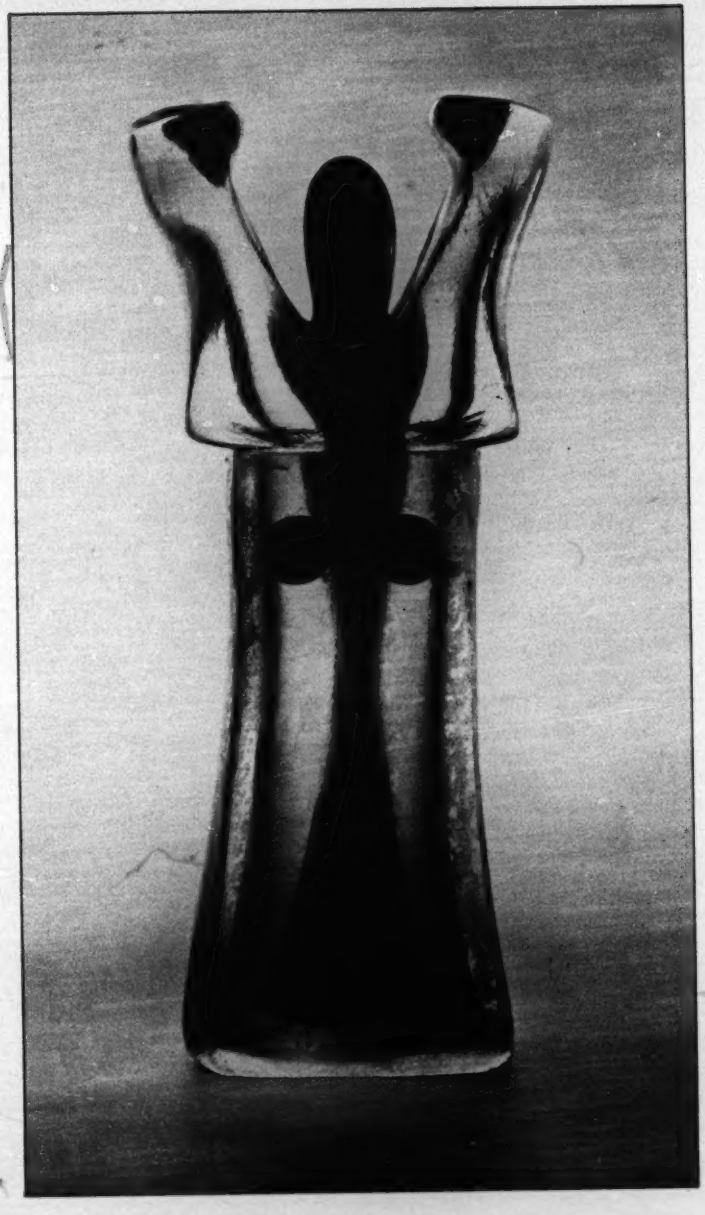
81 Renato Toso, **Harmony**, 1972, 8" high. Renato Toso, Fratelli Toso, Murano, Italy.



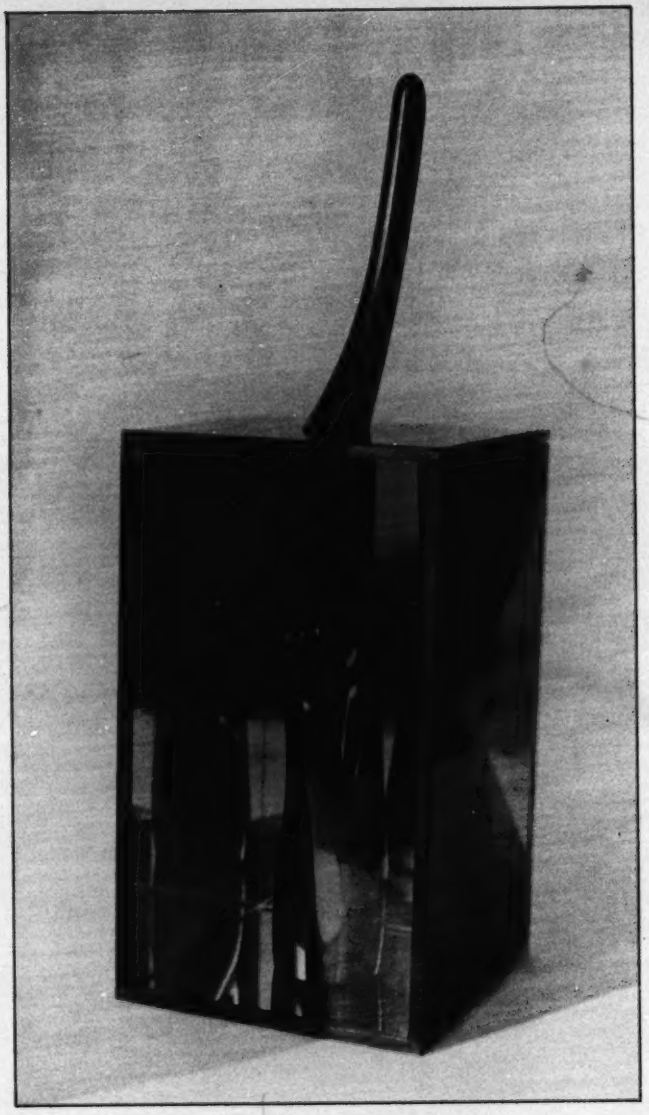
94 Marvin Lipofsky, **#6 Venini Series**, Murano, Italy, 1972. Mr. Marvin Lipofsky, courtesy of Venini, Murano, Italy, with help from Gianni Toso.



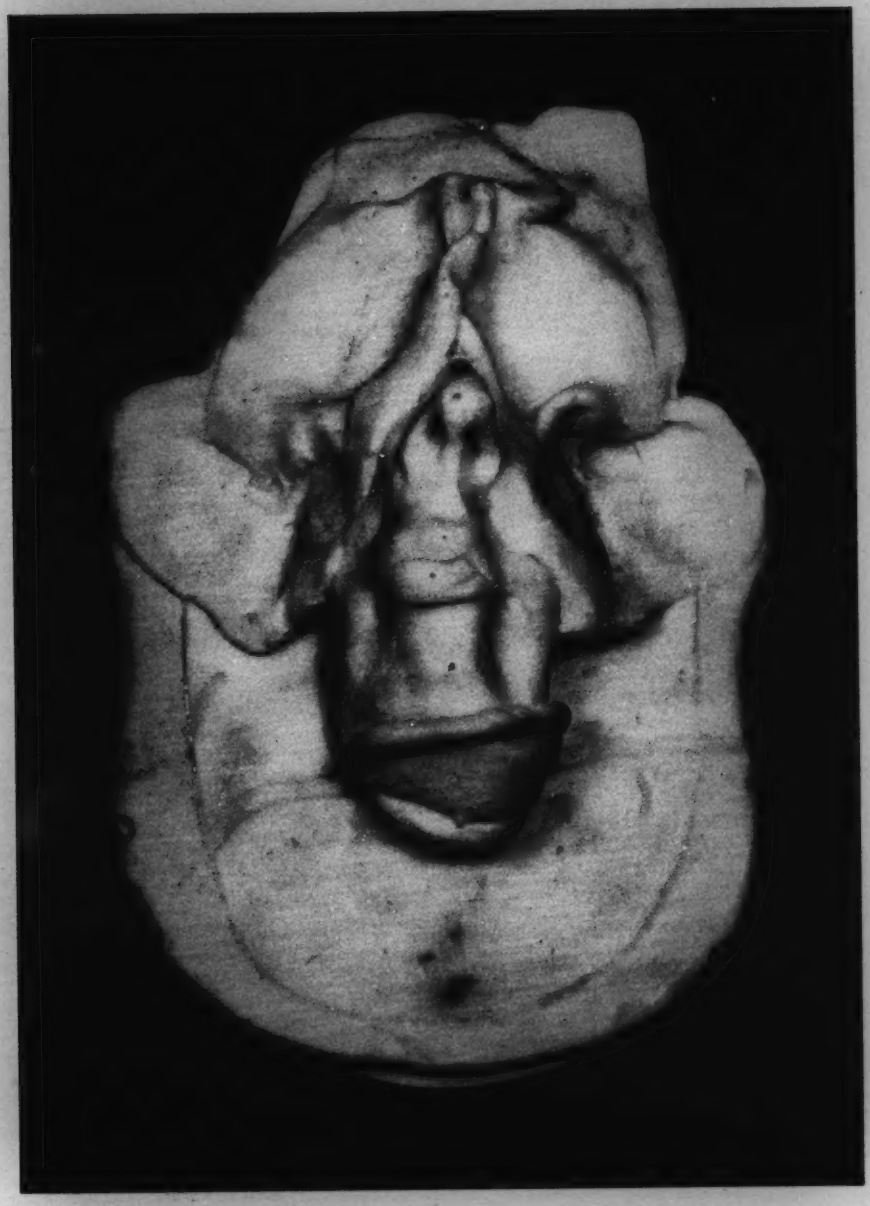
91 Paul Jenkins, **Buddha's Tooth,** 1969, 15" high. Made at Fucina Degli Angeli, Italy.
Anonymous private collection.



103 Roberto Moretti, **Rage**, 1972, 18" high. Mr. Roberto Moretti.

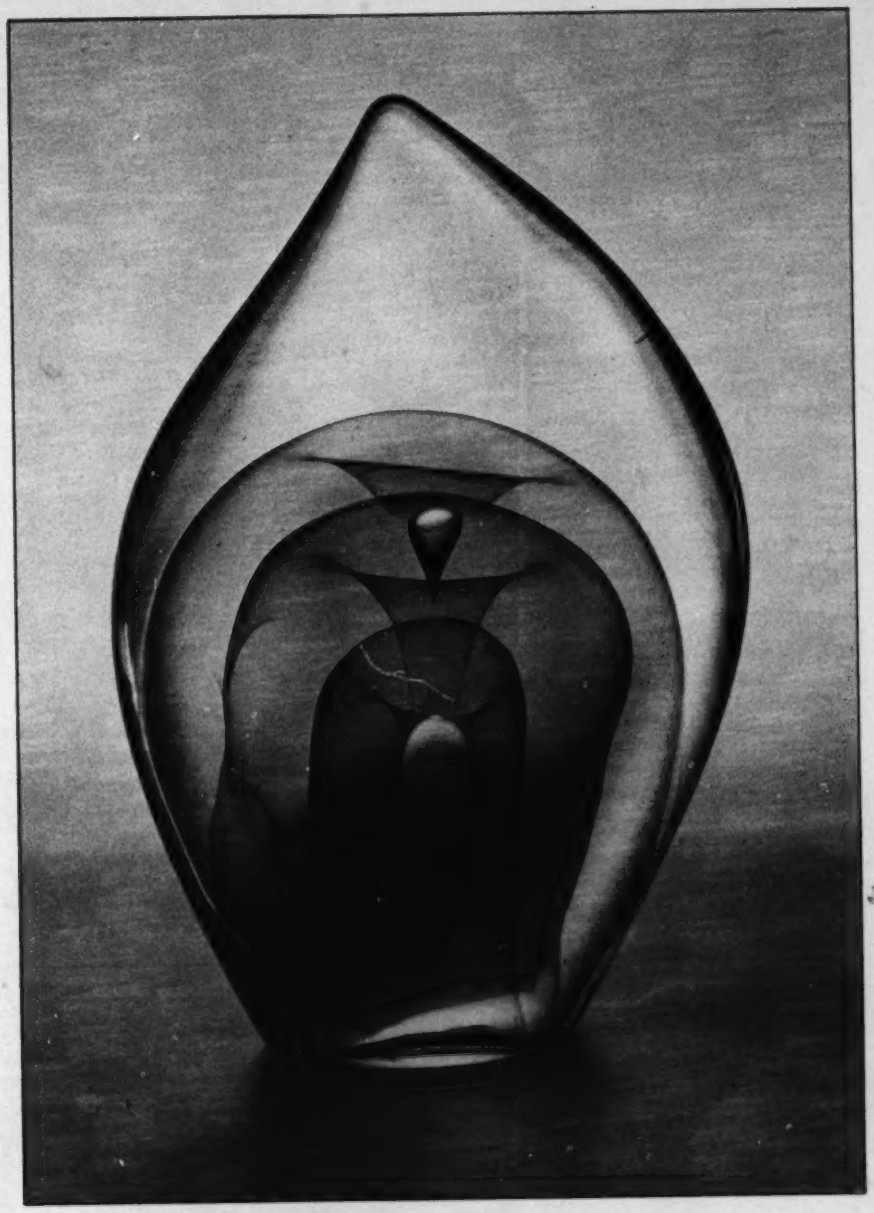


115 Michael Cohn, **Blues Box**, 1971, 18" high. Mr. Michael Cohn.

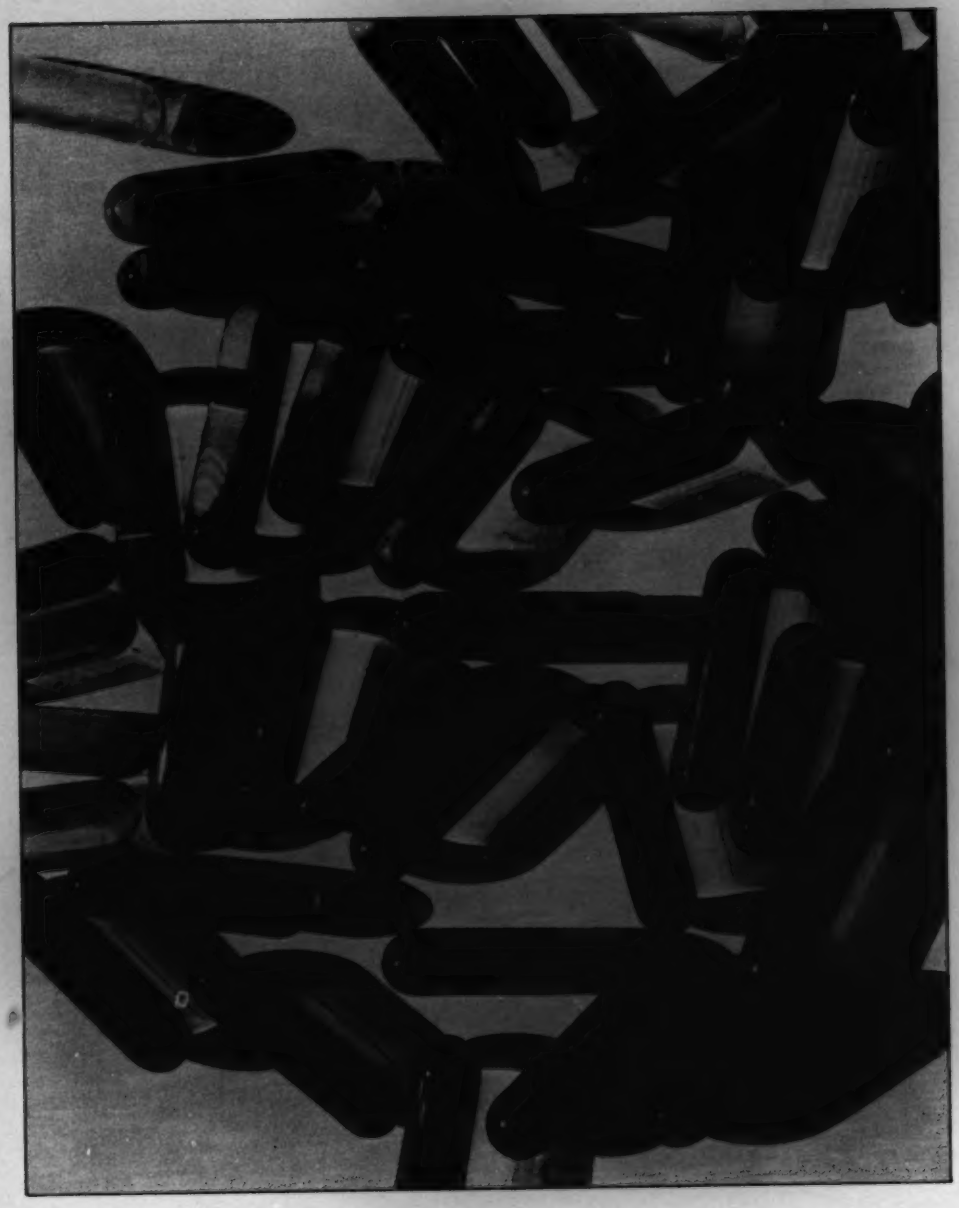


123 Henry Halem, **Blind Image**, 1972, 14" high. Mr. Henry Halem.

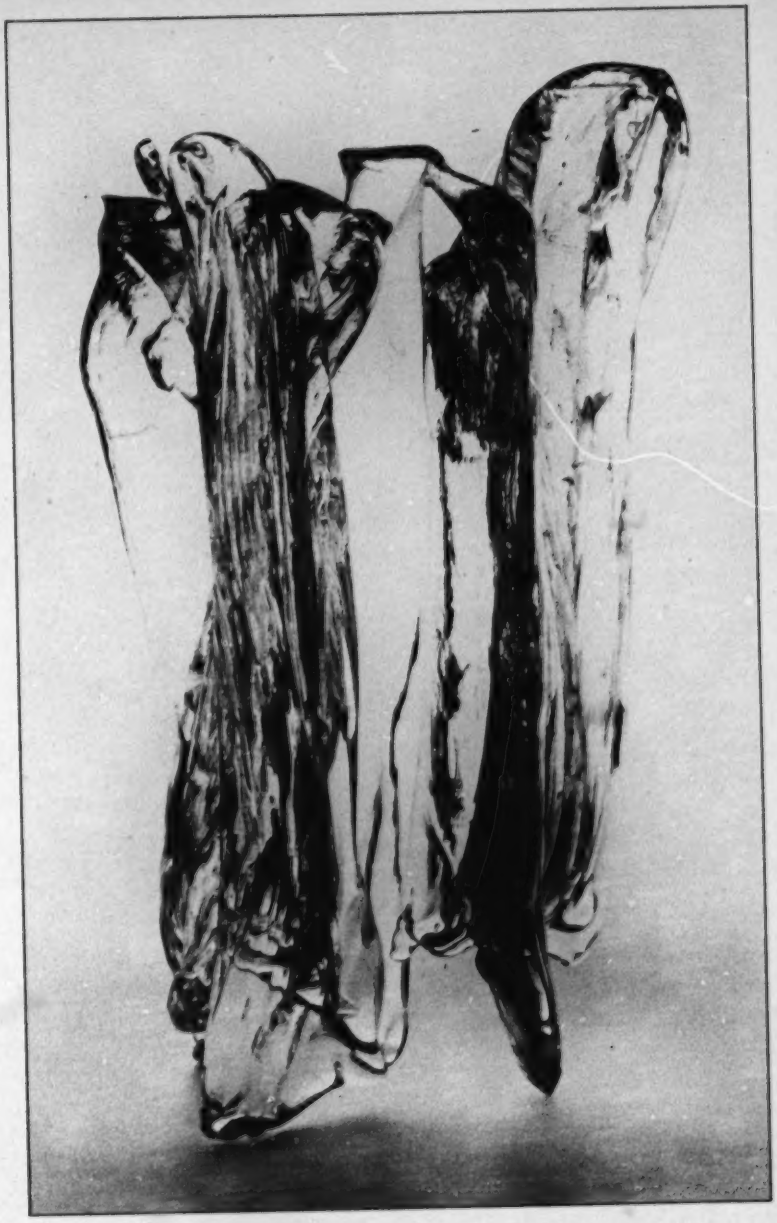
129 Eric Hilton, **Polar Route,** 1970, 18" high. Mr. Eric Hilton.



140 Dominick Labino, **Emergence XIV**, 1972, 10" high. Mr. Dominick Labino.

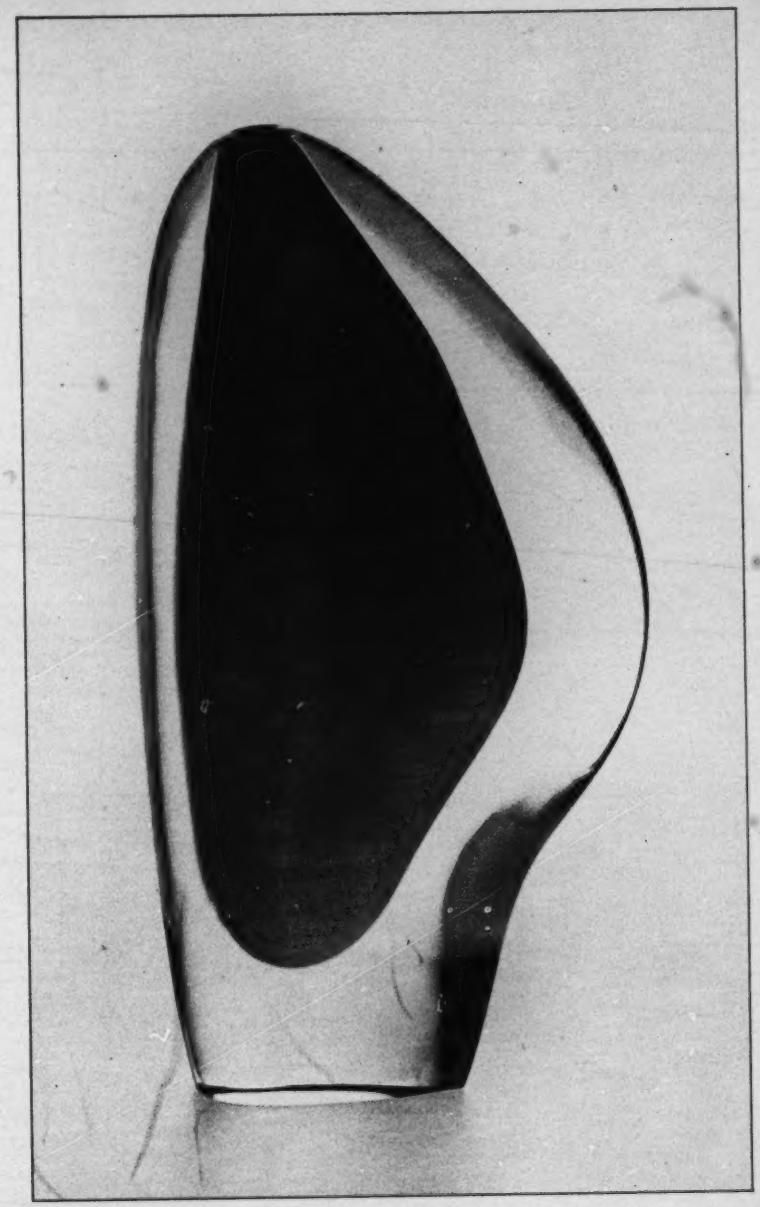


142 Richard Marquis, **Capsule Scatter Piece,** 1971, 50 pieces, each 1-1/4" long. Mr. Richard Marquis.

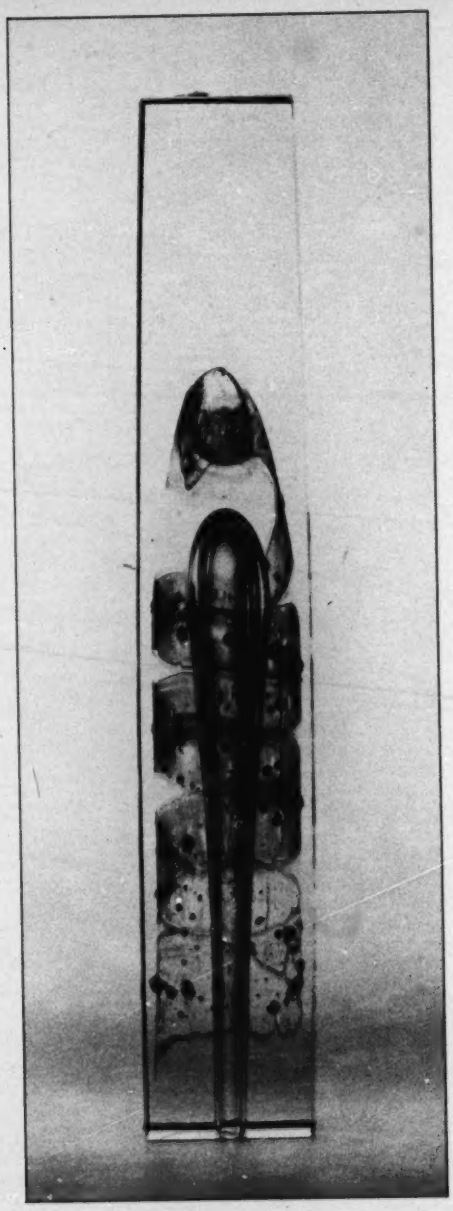


69 Rene Roubicek, **Untitled,** 1971, 15-1/4" high. Collection of Ray and Lee Grover.

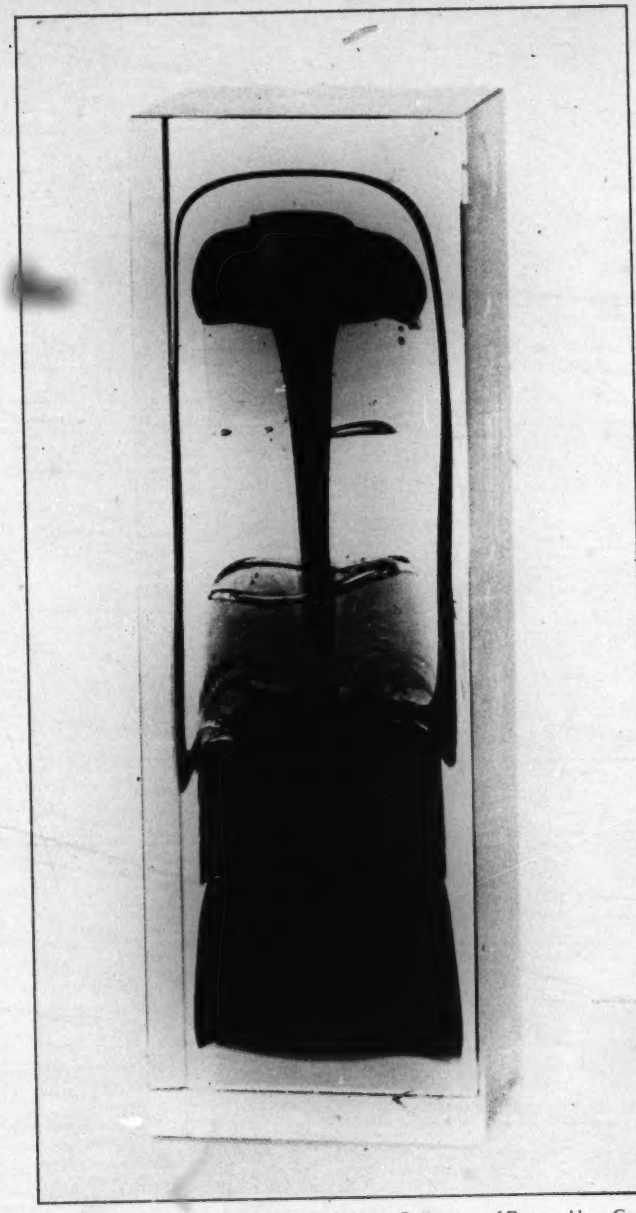
71 M. Roubickova, **Glass Bouquet,** 1971, 18" high. Collection of Ray and Lee Grover.



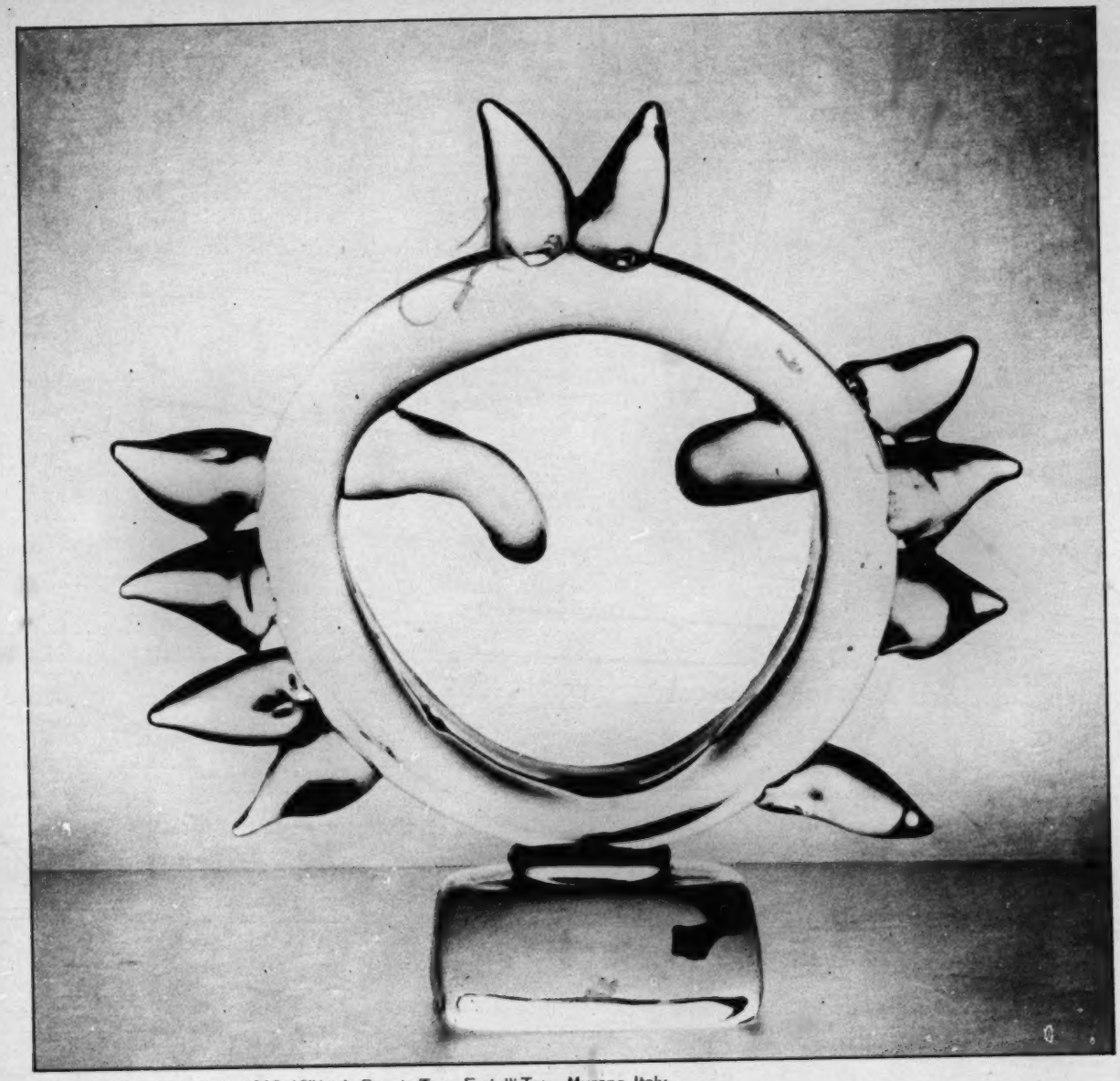
73 Timo Sarpaneva, **Sarpaneva Lancet**, 9-3/4" high. Collection of Ray and Lee Grover.



75 Dr. Spacek, **Bridal Vase,** 12-1/4" high. Collection of Ray and Lee Grover.

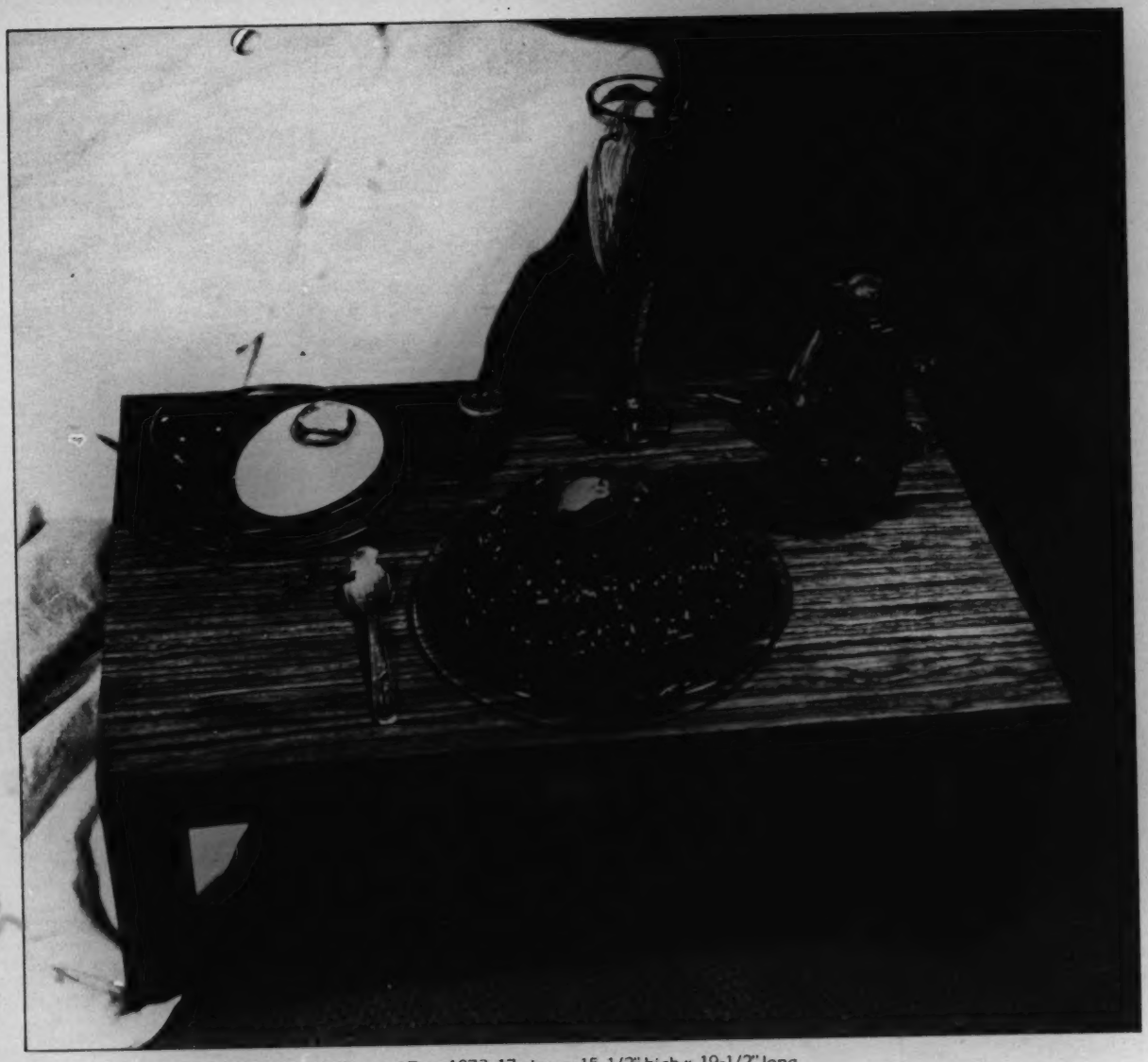


76 Oiva Toikka, **Nuutajarvi Notsjo,** 6" high. Collection of Ray and Lee Grover.



79 Renato Toso, **Sun Form,** 1972, 18" high. Renato Toso; Fratelli Toso, Murano, Italy.

113 Andre Billeci, **Untitled**, 1973, 28" x 60" x 30." Collection of the artist.

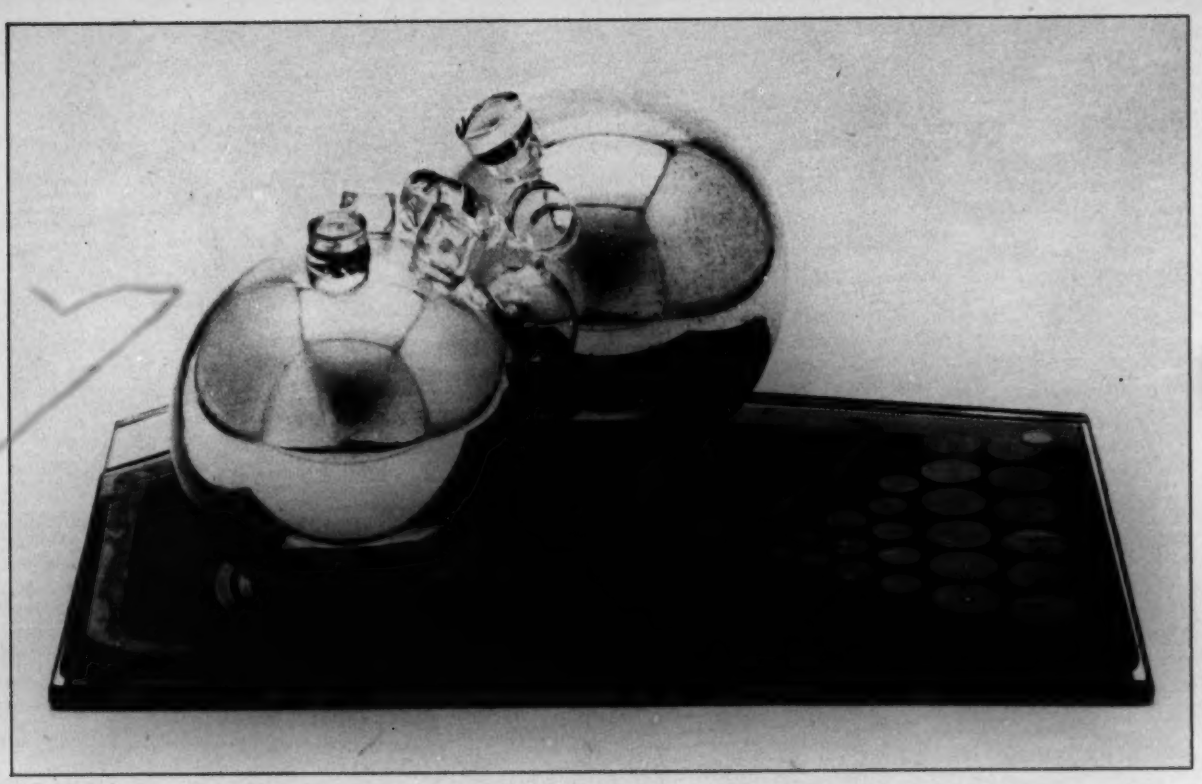


124 Audrey Handler, **Breakfast with Waffles and Egg,** 1973, 17 pieces: 15-1/2" high x 19-1/2" long.
Audrey Handler: glass and silver; Ron Dekok, woodwork. Collection of the artist.

133 David Hopper, **White Glass #4**, 1972. Collection of the artist.

148 Joel Philip Myers, **In my Garden,** 1973, 7-1/2" high. Collection of the artist.

150 Robert E. Naess, **Foetus Charm,** 1969, 15-1/4" high. Collection of Ray and Lee Grover.



155 Jack A. Schmidt, **Game Board 25**, 1973, 5" high. Collection of the artist.

GLOSSARY OF GLASS TERMS

Ancient glass Generally refers to glass made before the Venetian era of glass making.

Anneal To cool glass slowly and properly in a lehr. The critical area for cooling is 1000-800° F.

Antique glass A trade term for glass more than 25 years old.

Batch melt Glass made by melting sand and chemicals directly.

Blown glass The shaping of glass by blowing air through a hollow rod into the center of a molten glass gather. Variations include free blown, and pattern mold.

Borosilicate glass Example: Vycor, with 96% silica, soluables leached out.

Cameo glass A sculptured or carved color layer over a base glass. The Potland Vase.

Cased A layer of colored glass melted over a base. Cameo; flashed.

Cold painted Glass painted on back, viewed through the brilliant transparency. A folk art form usually. Not permanent.

Copper wheel engraving Use of smooth copper wheels, along with an abrasive in oil, to grind or cut glass designs. Also, cut glass.

Core ware The Egyptian technique of dipping a sand core into molten glass to form the first containers. Core is removed.

Cut glass Grinding stones that are worked wet to cut designs onto glass. Straight cuts easier.

Decal A decal design made with glass colors is then fired to melt it to the glass surface, permanent.

Diatreta A carved or pierced outer layer of glass connected to an inner glass base; usually all one piece.

Direct carving Glass chunks may be carved, ground, chiseled, or otherwise shaped like other sculpture materials.

Electroplating Glass may be covered with various metals in this process.

Enameled glass Opaque glass colors melted onto glass surface. The colors are actually glass powders.

Engraved Design cut or scratched on glass with diamond point, stone, metal, or copper wheel. Usually more complex and flexible than cut glass work.

Etching Glass may be etched by hydroflouric acid, HF 1, which likes silica. Dangerous.

Flashing Very thin layer of colored glass fired or vaporized on base glass.

Gather A ball of molten glass taken from a pot or furnace on the end of a hollow blow rod.

Gilded, Metals, such as gold, fired onto glass.

Glass A vitreous, non-crystalline, amorphous liquid.

Glory hole The window in a reheat furnace where the working glass is reheated to keep it soft.

Iridescence Thin laminated flakes of glass showing decomposition with age. Also artificial, as done by Tiffany.

Latticinio Threads of white or colored glass within clear glass, sometimes lace-like in pattern. Vetro de Trina. Venetian.

Lampwork Work with pre-formed glass rods and tubes, shaping, as in chemistry labs, or in tourist "Bohemian glass blower" shops.

Layered Building of a solid form by adding glass in layers.

Lead glass Also called flint glass. Lead is the melting agent.

Leaded glass Stained glass window held in place by lead cames.

Lehr A cooling or annealing oven or furnace.

Metal A term used for glass in a glass factory.

Millefiori Thousand flowers. Small flower-like pieces of glass canes, called perle, that are melted together to form a sheet. In Murano also called Murrina or Murrhina.

Mosaic Most Byzantine wall mosaic paintings were made from small pieces of glass called tesserae.

Paste glass Called pate-de-verre. Powdered or granulated glass melted into shape. Lost wax and molds used.

Pattern mold A design is carved into the walls of a mold used to shape glass.

Polish To restore the transparency of glass by fine polishing. May be done also with fire by melting the surface.

Pontil Also puntil or puntey rod. Solid steel rod with serrated tip, attached to base of glass being blown, as a holder.

Pot The crucible in which glass is melted within the furnace. Usually ceramic.

Prunt A spot or daub of glass applied to a glass shape while both are soft or hot.

Sandblast A method of abrasive grinding or shaping of glass by sand under pressure.

Sag temperature Stage at which glass sinks into a mold or deforms. About 1400-1500° F., depending on the type of glass.

Shape names Many glass containers have names from classical or later history. Alabastron, amphoriska, roemer, humpen, lily pad. Read glass history.

Silicate crafts The three major crafts—ceramics, glass, and enamel—based on the melting of flint or silica to secure glass.

Slab glass Indicates thick glass used in architecture, often in place of stained glass.

Soda glass Glass melted by an alkali such as soda or borax.

Stained glass The popular name for a colored glass window; more properly called leaded glass. The transparent glass colors melted into or onto glass.

Tooling The shaping, marking, or decorating of soft glass by the use of hand-held tools.

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